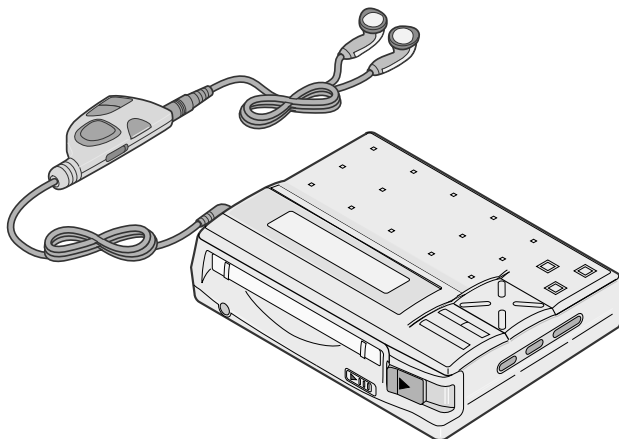


SHARP SERVICE MANUAL

No. S4724MDMS200W



MD-MS200W MD-MS200 MD-MS200H

• In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified should be used.



CONTENTS

	Page
SAFETY PRECAUTION FOR SERVICE MANUAL (MD-MS200H ONLY)	2
BATTERY DISPOSAL (FOR MD-MS200 ONLY)	3
SPECIFICATIONS	3
NAMES OF PARTS	4
OPERATION MANUAL	4
DISASSEMBLY	7
REMOVING AND REINSTALLING THE MAIN PARTS	8
ADJUSTMENT	9
EXPLANATION OF ERROR DISPLAY	25
NOTES ON SCHEMATIC DIAGRAM	26
BLOCK DIAGRAM	27
SCHEMATIC DIAGRAM/WIRING SIDE OF P.W.BOARD	28
WAVEFORMS OF CD CIRCUIT	36
TROUBLE SHOOTING	38
FUNCTION TABLE OF IC	44
PARTS GUIDE/EXPLODED VIEW	
PACKING OF THE SET (MD-MS200 ONLY)	
PACKING METHOD (MD-MS200H FOR UK ONLY)	

SHARP CORPORATION
SHARP ELECTRONICS CORPORATION

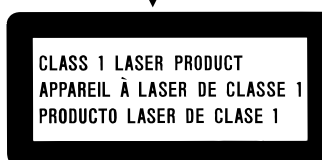
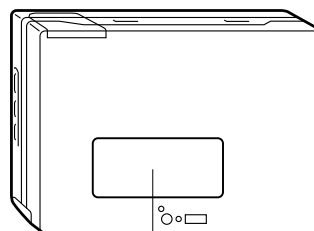
Service Headquarters: 1300 Naperville Drive Romeoville, IL 60441

SAFETY PRECAUTION FOR SERVICE MANUAL (MD-MS200H ONLY)

Precaution to be taken when replacing and servicing the Laser Pickup.

The AEL (Accessible Emission Level) of Laser Power Output for this model is specified to be lower than Class I Requirements. However, the following precautions must be observed during servicing to protect your eyes against exposure to the Laser:-

- (1) When the cabinet has been removed, the power is turned on without a compact disc, and the Pickup is on a position outer than the lead-in position, the Laser will light for several seconds to detect a disc. Do not look into the Pickup Lens.
- (2) The Laser Power Output of the Pickup inside the unit and replacement service parts have already been adjusted prior to shipping.
- (3) No adjustment to the Laser Power should be attempted when replacing or servicing the Pickup.
- (4) Under no circumstances look directly into the Pickup Lens at any time.
- (5) **CAUTION - Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

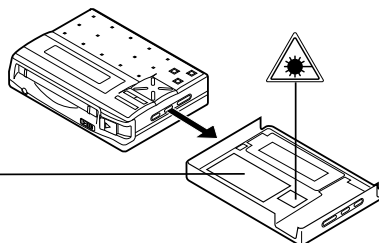


LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
LASER TRÍDY 1
LASER TRIEDY 1

Laser Diode Properties

- Material: GaAlAs
- Wavelength: 785 nm
- Pulse time:

Read mode: 0.8 mW Continuous
Write mode: max 10 mW 0.5
min cycle 1.5S
Repetition



VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERAS. KAN ANVÄNDAREN UTSÄTTAS FÖR ÖSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING! Ösynlig laserstrålning när denna del är öppnad och spärring är urkopplad. Beträkta ej strålen.

Precaution to be taken when replacing and servicing the laser pickup.

The following precautions must be observed during servicing to protect your eyes against exposure to the laser.

Warning of possible eye damage when repairing:

If the AC adaptor or batteries are connected when the top housing (disc cover) of the unit is removed, and the PLAY key is pressed, the laser will light up during disc access (2-3 seconds). (Fig. 2-1) During the operation, the laser will leak from the opening between the magnetic head and the mechanical chassis (Fig. 2-2). In order to protect your eyes, you must not look at the laser during repair. Before repairing, be sure to disconnect the AC adaptor and remove the batteries.

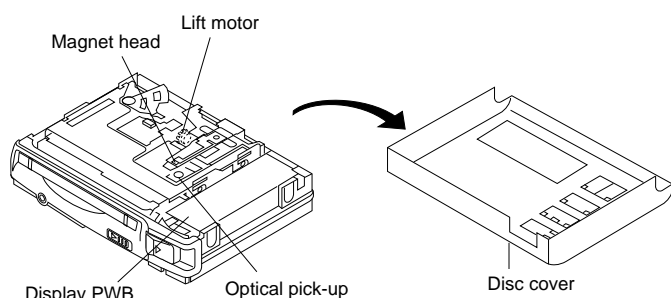


Figure 2-1

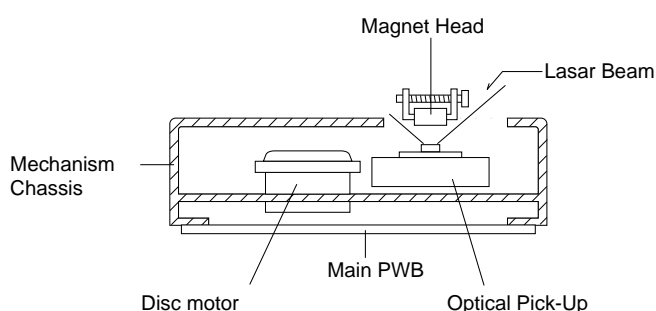


Figure 2-2

BATTERY DISPOSAL (FOR MD-MS200 ONLY)

Contains nickel cadmium (or sealed lead) battery. Must be recycled or disposed of properly. Remove the battery from the product and contact federal or state environmental agencies for information on recycling and disposal options.

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

● General

Power source: DC 3.6 V (rechargeable lithium-ion battery x 1)
DC 5 V (AC adaptor)
AC 110 - 240V, 50/60 Hz

Power consumption: 0.15 A (AC adaptor)
4 W

Output power: RMS; 20mW (10 mW + 10mW)
(0.2% T.H.D.)

Rechargeable battery performance: Approx. 9.5 hours (continuous play)
(Fully charged) Approx. 7.0 hours (continuous recording)

Input sensitivity:

Recording level	Reference input level	Input impedance
MIC H	0.25 mV	10k ohms
MIC L	2.5 mV	10k ohms
LINE	100 mV	20k ohms

Output level:

	Specified output	Maximum output level	Load impedance
Headphones	—	10 mW + 10 mW	16 ohms
LINE	350mV (-12dB)	—	50 kohms

Dimensions: Width: 4-5/16" (109.2 mm)
Height: 1-7/32" (30.5 mm)
Depth: 3-7/32" (81.3 mm)

Weight: 275 g (0.6 lbs.) with rechargeable battery

Input jack: Line/Mic/Optical

Output jack: Headphones

● MiniDisc Recorder

Type: Portable MiniDisc recorder

Signal readout: Non-contact, semi-conductor laser pick-up

Audio channels: 2

Frequency response: 20 to 20,000 Hz \pm 3 dB

Rotation speed: Approximately 400 to 900 rpm

Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)

Coding: ATRAC (Adaptive TRansform Acoustic Coding)

Recording method: Magnetic modulation overwrite method

A/D,D/A converter: 1-bit

Sampling frequency: 44.1 kHz

Modulation system: EFM (Eight to Fourteen Modulation)

Wow and flutter: Unmeasurable (less than $\pm 0.001\%$ W.peak)

● Headphones

Type: Inner-ear dynamic

Impedance: 16 ohms

Specifications for this model are subject to change without prior notice.

OPERATION MANUAL

Rechargeable battery power

When the rechargeable battery is used for the first time or when you want to use it after a long period of disuse, be sure to charge it fully.

- 1 Open the rechargeable battery compartment cover.
- 2 Insert the rechargeable battery.
- Insert the side with the arrow first.
- 3 Close the rechargeable battery compartment cover.
- 4 Plug the AC adaptor into the AC socket, and then insert the plug on the AC adaptor lead into the DC IN 5V socket.
- 5 Press the n OFF button to begin charging.
- " " will appear, and the battery will begin charging.
- Battery charging will be complete in 3 hours. When battery charging begins, " " will be displayed. When the charging is complete, it will go out.

Notes:

- After charging has been completed, the AC adaptor may be left connected. (Charging at night.)
- The battery will not be charged whilst the main unit is operating.
- If the AC adaptor is removed from the main unit or from the AC socket whilst charging, " " will not disappear for about 1 minute. This is normal.

Rechargeable battery operating time

After charging is complete, the unit can be used continuously as follows:

- Continuous playback:
Approx. 9.5 hours (fully charged, volume level: VOL 20)
- Continuous recording:
Approx. 7 hours (fully charged, analogue input, volume level: VOL 0)

How to determine the remaining battery time:

As the battery charge is reduced, the bars in the indicator will go out one by one. When the battery is almost completely exhausted, the whole battery indicator will flash.

At this point you should recharge the battery.

When the battery has run completely out, "BATT EMPTY" will be displayed, and the power will be disconnected automatically.

- When the AC adaptor is used, the battery indicator will light up in the fully charged condition.

Note:

If the battery indicator is flashing, it will be impossible to start recording or editing.

Notes about the rechargeable battery

- A rechargeable lithium-ion battery is the only kind that can be used. Even if the battery supplied with the unit is not used, you should charge it at least once every three months because of the special quality of this battery.
- The rechargeable battery can be charged approximately 300 times.
- Do not use any battery other than that specified. Use of other batteries may cause malfunctions.
- When the operating time is reduced to about half the normal amount of time, even after a full charge is performed, replace the battery with a new one.
- When charging or when using the rechargeable battery, use it within an ambient temperature range of 5°C to 35°C.

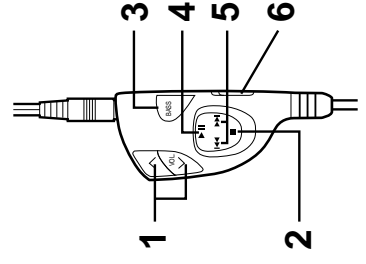
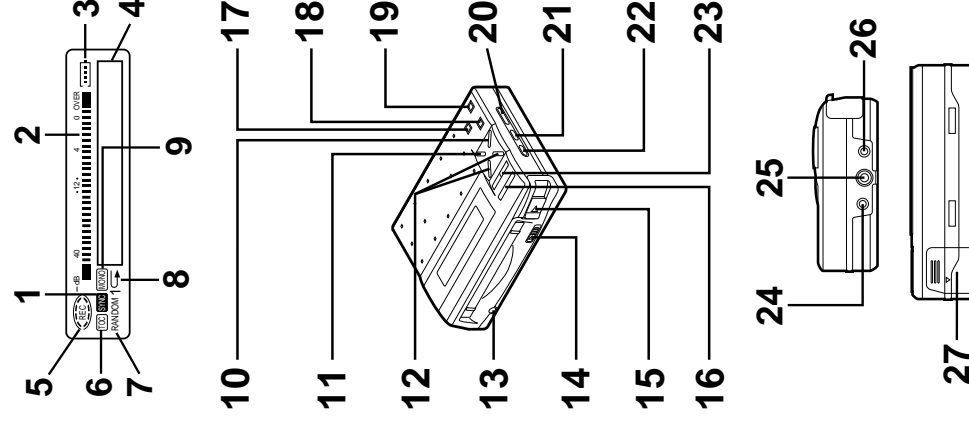
NAME OF PARTS

Main Unit

1. Synchro Recording Indicator
2. Level Meter
3. Battery Indicator
4. Character Information Display
5. Disc Status Indicator
6. TOC Indicator
7. Random Indicator
8. Repeat Indicator:
9. Monaural Long-Play Mode Indicator
10. Play/Pause Button:
11. Stop/Power Off/Charge Button:
12. Fast Reverse/Fast Forward/Recording Level Control/Cursor Button:
13. Microphone Input Socket
14. Hold Switch
15. Eject Lever
16. Enter/Synchro/Fast Play Button
17. Character/Symbol Select/Time Button
18. Display/Lowercase Letter Button
19. Record/Track Mark Button
20. Edit/Auto Mark/Time Mark Button
21. Mode/Space Button
22. Extra Bass/Delete Button
23. Volume/Name Select Buttons:
24. 5V DC IN Socket
25. Headphones Socket
26. Optical/Line Input Socket
27. Rechargeable Lithium-Ion Battery Compartment

Remote Control Unit

1. Volume Buttons:
2. Stop/Power Off Button
3. Track Mark/Extra Bass Button
4. Play/Pause Button:
5. Fast Reverse/Fast Forward/Cursor Buttons:
6. Hold Switch



MINIDISC SYSTEM LIMITATIONS

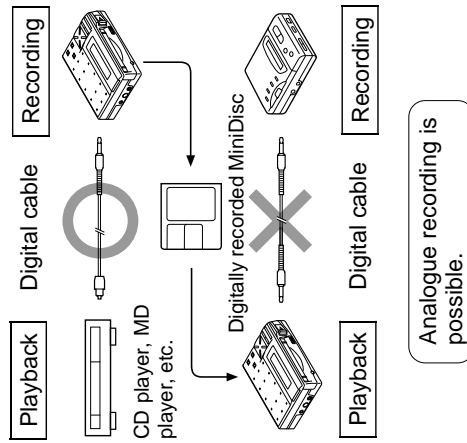
Even if the maximum recording time of a MiniDisc has not been reached, "DISC FULL" or "TOC FULL" may be displayed.	When the number of tracks used reaches the limit, regardless of the remaining recording time, further recording will be impossible. (Maximum number of tracks: 254)
Even if the number of tracks and the recording time have not reached the limit, "DISC FULL" may be displayed.	If there are scratches on a disc, the unit will automatically avoid recording in those areas. The recording time will be reduced.
Even if several short tracks are erased, the remaining recording time may not show an increase.	When the remaining recording time of a disc is displayed, short tracks less than 8 seconds long may not be included in the total.
Two tracks may not be combined in editing.	For MiniDiscs on which repeated recording and editing operations were performed, the COMBINE function may not work.
The total of the recorded time and time remaining on a disc may not add up to the maximum possible recording time.	A cluster (about 2 seconds) is normally the minimum unit of recording. So, even if a track is less than 2 seconds long, it will use about 2 seconds of space on the disc. Therefore, the time actually available for recording may be less than the remaining time displayed. If there are scratches on discs, those sections will be automatically avoided (no recording will be placed in those sections). Therefore, the recording time will be reduced.
When recorded tracks are played back using the cue and review operations, some sounds may be skipped.	For MiniDiscs on which repeated recording and editing were performed, some sounds may be skipped whilst cueing and reviewing.
A track number can be created in the middle of a track.	If there are scratches or dust on a MiniDisc, the track numbers following that track will be increased by one.

There are cases where digital recording may be impossible.

In the following cases digital recording is impossible, even if you are using digital cables.

When you attempt to make a new digital recording from a track that was digitally recorded on a MiniDisc

- MiniDiscs are designed so that only first generation digital copies can be made, further digital copies are prevented by the SCMS (Serial Copy Management System).



TROUBLESHOOTING

Moisture condensation

In the following cases, condensation may form inside the unit.

- Shortly after turning on a heater.
- When the unit is placed in a room where there is excessive steam or moisture.
- When the unit is moved from a cool place to a warm place.

When the unit has condensation inside, the disc signals cannot be read, and the product may not function properly.

- If this happens, remove the disc. The condensation should evaporate in approximately 1 hour. The unit will then function properly.

If trouble occurs

If strange sounds, smell or smoke come out of the unit or an object is dropped into the unit, remove the AC adaptor from the AC socket and contact an authorised Sharp service centre.

Note:

When this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.) or if it is operated incorrectly, it may malfunction. If such trouble occurs, proceed as follows:

1. Unplug the AC adaptor from the AC socket.
2. Remove the rechargeable battery.
3. Leave the unit completely unpowered for approximately 30 seconds.
4. Reconnect the AC adaptor to the AC socket and retry the operation.

Many potential "problems" can be resolved by the owner without calling a service technician. If something seems to be wrong with this product, check the following before calling your authorised SHARP dealer or service centre.

PROBLEM	CAUSE	REMEDY
The unit does not turn on.	<ul style="list-style-type: none"> The AC adaptor is disconnected. The rechargeable battery is exhausted. The unit is in the safety mode. 	<ul style="list-style-type: none"> Plug in the AC adaptor. Recharge the battery. Move the HOLD switch to turn off the safety mode.
No sound is heard from the headphones.	<ul style="list-style-type: none"> The volume is set too low. The remote control unit or headphones are not plugged in. 	<ul style="list-style-type: none"> Increase the volume. Plug the remote control unit or headphones in securely.
When the operation buttons are pressed, the unit does not respond.	<ul style="list-style-type: none"> The unit is in the safety mode. The rechargeable battery is exhausted. The remote control unit plug or headphone plug is not inserted firmly. 	<ul style="list-style-type: none"> Move the HOLD switch to turn off the safety mode. Recharge the battery. Insert the remote control unit plug or headphone plug securely.
Some sounds are skipped.	<ul style="list-style-type: none"> The rechargeable battery is exhausted. The unit is receiving excessive vibration. 	<ul style="list-style-type: none"> Recharge the battery. Place the unit in a vibration-free place.
The MiniDisc cannot be ejected.	<ul style="list-style-type: none"> The track number or character information has not been written on the disc. The unit is in the recording or editing mode. 	<ul style="list-style-type: none"> Press the n OFF button to turn off the power (which will finish writing the information on the disc).
Recording and editing are impossible.	<ul style="list-style-type: none"> Is the MiniDisc protected against accidental erasure? Is the unit connected properly to the other equipment? Is the AC adaptor unplugged or did a power failure occur whilst recording or editing? Is the unit in the safety mode? 	<ul style="list-style-type: none"> Slide the accidental erase prevention tab back to its original position. Connect the unit properly to the other equipment. Plug in the AC adaptor. Move the HOLD switch to turn off the safety mode.

Error messages	Meaning	Remedy
BATT EMPTY	<ul style="list-style-type: none"> The rechargeable battery run down. 	<ul style="list-style-type: none"> Charge the rechargeable battery (or use the AC adaptor for power.)
BLANK DISC	<ul style="list-style-type: none"> Nothing is recorded. 	<ul style="list-style-type: none"> Replace the disc with a recorded disc.
00Tr 0:00	<ul style="list-style-type: none"> Music is not being recorded. 	<ul style="list-style-type: none"> Record using the analogue cable.
Can't COPY	<ul style="list-style-type: none"> No copy can be made because of the SCMS copyright system. 	
Can't EDIT	<ul style="list-style-type: none"> A track cannot be edited. 	<ul style="list-style-type: none"> Change the stop position of the track and then try editing it.
Can't REC	<ul style="list-style-type: none"> Recording cannot be performed correctly due to vibration or shock in the unit. 	<ul style="list-style-type: none"> Re-record or replace it.
Can't WRITE	<ul style="list-style-type: none"> Editing is impossible. 	<ul style="list-style-type: none"> Check the number of tracks.
DEFECT	<ul style="list-style-type: none"> Since this disc has scratches on it, the recording operation was skipped. 	<ul style="list-style-type: none"> If the sound you hear is not right, replace the disc with another recordable disc.
Din UNLOCK	<ul style="list-style-type: none"> Poor connection of the digital cable. 	<ul style="list-style-type: none"> Connect the digital cable securely.
DISC ERROR	<ul style="list-style-type: none"> The disc is damaged. 	<ul style="list-style-type: none"> Reload the disc or replace it.
DISC FULL	<ul style="list-style-type: none"> The disc is out of recording space. 	<ul style="list-style-type: none"> Replace it with another recordable disc.
HOLD	<ul style="list-style-type: none"> The unit is in the malfunction prevention state. 	<ul style="list-style-type: none"> Return the HOLD switch to its original position.
LOCKED	<ul style="list-style-type: none"> The EJECT lever was moved during recording or editing. 	<ul style="list-style-type: none"> Turn off the power and remove the MiniDisc.
LOCK ERROR	<ul style="list-style-type: none"> A disc has not been loaded. 	<ul style="list-style-type: none"> Load a disc.
NO DISC	<ul style="list-style-type: none"> You tried to record on a playback-only disc. 	<ul style="list-style-type: none"> Replace it with a recordable disc.
PB DISC	<ul style="list-style-type: none"> Improper power is being supplied. 	<ul style="list-style-type: none"> Use one of the specified power sources.
POWER ?	<ul style="list-style-type: none"> The disc is write protected. 	<ul style="list-style-type: none"> Move the write protection knob back to its original position.
PROTECTED	<ul style="list-style-type: none"> Since a track number is currently being located or written to, the unit cannot accept your command. 	<ul style="list-style-type: none"> Wait for a while and try the operation again.
SORRY	<ul style="list-style-type: none"> You have come to the conclusion that the unit is out of order. 	<ul style="list-style-type: none"> To have it repaired, go to the distributor where you purchased the unit.
SYSTEM ERR	<ul style="list-style-type: none"> The temperature is too high. 	<ul style="list-style-type: none"> Turn off the power, and wait for a while.
TEMP OVER	<ul style="list-style-type: none"> A large portion of the disc has been damaged. 	<ul style="list-style-type: none"> Replace it with another recorded disc.
TOC ERROR	<ul style="list-style-type: none"> There is no space left for recording character information (track names, disc names, etc.). 	<ul style="list-style-type: none"> Replace it with another recordable disc.
TOC FULL	<ul style="list-style-type: none"> The track has been protected from being erased. 	<ul style="list-style-type: none"> Edit the track with the device on which it was recorded.
Tr. Protect	<ul style="list-style-type: none"> A large portion of the disc has been damaged. 	<ul style="list-style-type: none"> Replace it with another recorded disc.
UTOC ERROR	<ul style="list-style-type: none"> There is an error in the recorded signal. 	<ul style="list-style-type: none"> Replace it with another recordable disc or use the ALL ERASE function (page 27), to erase the signal error and then try recording again.
? DISC	<ul style="list-style-type: none"> A disc which contains data other than music was played. There is an error in the signal from the disc. 	<ul style="list-style-type: none"> A disc which contains non-music data cannot be played. Replace it with another recorded disc.

DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take the battery and minidisc out of the unit.
2. When disassembling the machine, be sure to withdraw the power plug from the socket in advance.
3. When disassemble the parts, remove the nylon band or wire holder as necessary.

To assemble after repair, be sure to arrange the wires as they were.

If a screw of different length is fitted to the MD mechanism (the screw of the part to be fitted to the MD mechanism chassis), it may contact the optical pickup, resulting in malfunction.

4. When repairing, pay due attention to electrostatic charges of IC.

STEP	REMOVAL	PROCEDURE	FIGURE
1	Bottom Cover	1. Screw (A1) x5	7-1
2	Disc Cover (Note)	1. Screw (B1) x4 2. Flexible PWB (B2) x1	7-1
3	Main PWB	1. Screw (C1) x3 2. Flexible PWB (C2) x4 3. Soldering (C3) x2	7-2
4	Front Cabinet	1. Screw (D1) x1 2. Remove the front cabinet in the arrow direction.	7-2

Note:

When removing the upper lid, at first turn the operation knob side in the arrow direction to remove.

Installing the front cabinet (See Fig. 7-3.)

1. Make sure that the lid opening and closing spring has been engaged at the upper side as shown in Figure < A > .
2. Fit the MD lid right pin into the lid opening and closing lever to install it.

Note:

- Take care since the antivibration rubber may come off.
- If the main PWB has been installed previously, fit the knob to the HOLD switch shown in Figure < B > .
- If the mechanism has been installed, the antivibration rubber may come off from the center cabinet fitting part when the front part of center cabinet is widened.

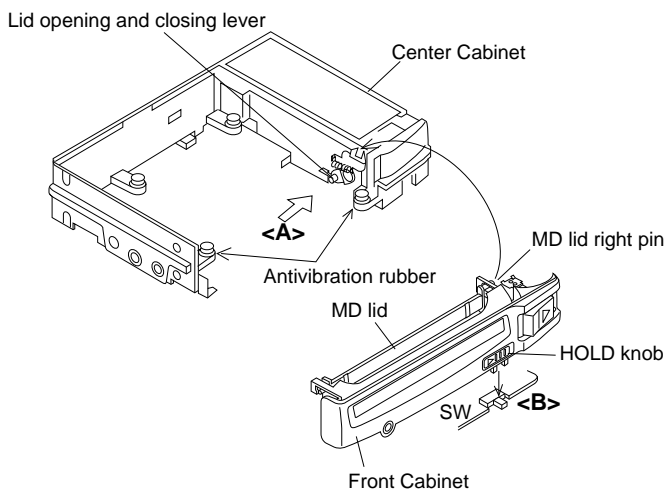


Figure 7-4

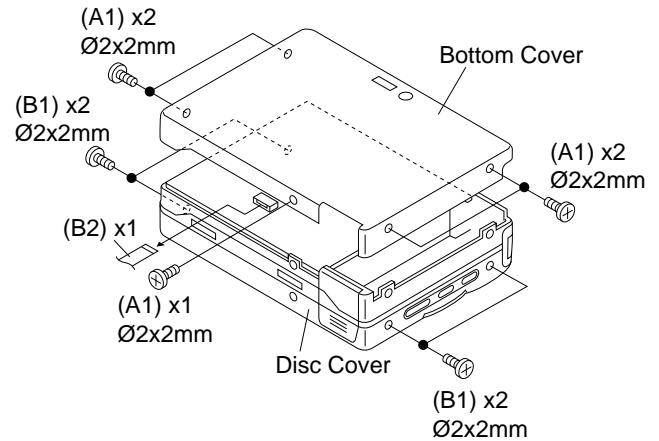


Figure 7-1

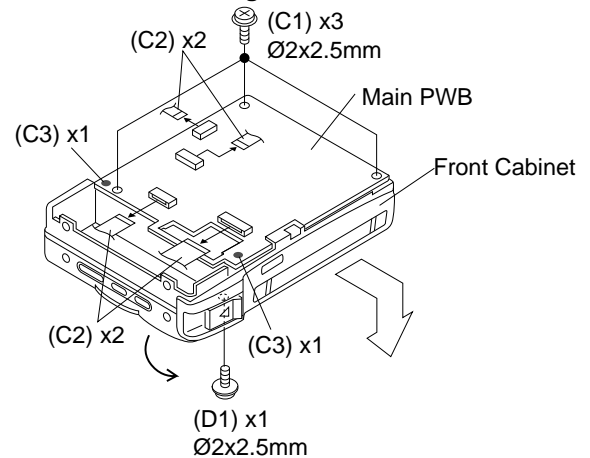


Figure 7-2

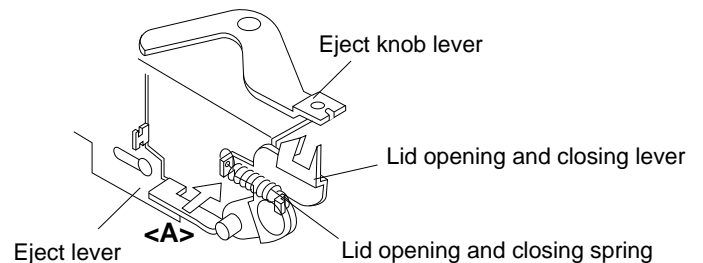


Figure <A>

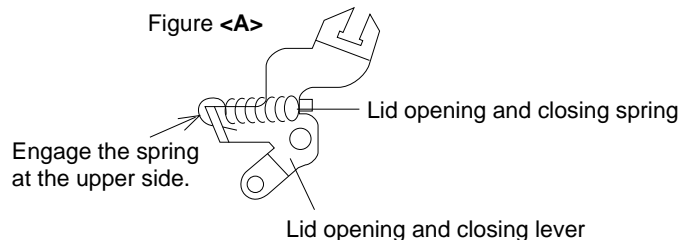


Figure 7-3

REMOVING AND REINSTALLING THE MAIN PARTS

Remove the mechanism according to the disassembling methods 1 to 4. (See Page 7.)

How to remove the disc motor (See Fig. 8-1.)

1. Remove the solder joint (A1) x 1 of flex PWB.
2. Remove the screws (A2) x 3 pcs. and remove the disc motor.

Take care so that the turntable is not damaged.

How to remove the slide motor (See Fig. 8-2.)

1. Remove the solder joint (B1) x 1 of slide motor lead wire.
2. Remove the screw (B2) x 1, and remove the slide motor.

Note:

Take care so that the motor gear is not damaged.
(If the gear is damaged, noise is raised in search mode.)

How to reinstall the optical pickup unit (See Fig. 8-3.)

1. Remove the screws (C1) x 5 pcs.
2. Remove the magnetic field arm block from the pickup, and move the magnetic field arm block outwards.

Note:

Take due care so that the magnetic head is not damaged.
3. Withdraw a little the slide motor side shaft (C2) x 1 pcs., and slowly raise the optical pickup.

How to remove the magnetic head (See Fig. 8-4.)

1. Remove the screw (D1) x 1 pc.
2. Remove the unsolder (D2) x 2 pcs. which connects the magnetic head and the head hookup flex.

Note:

Mount carefully so as not to damage the magnetic head.

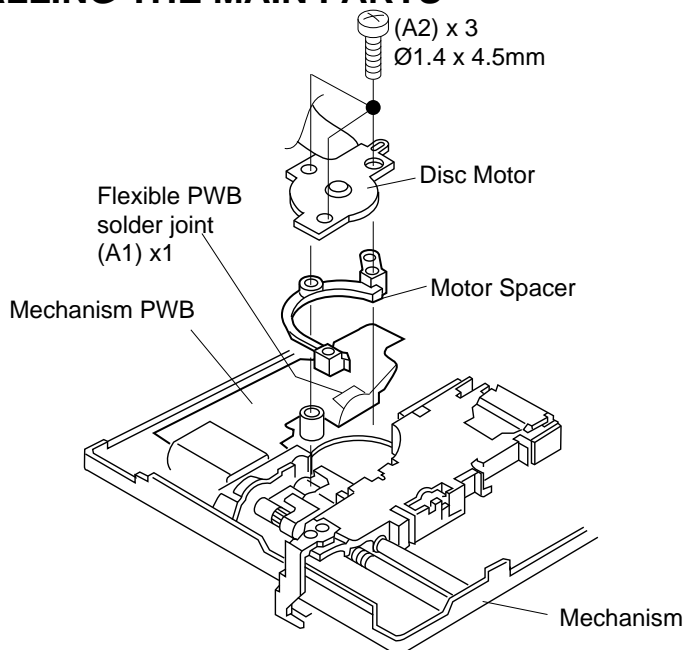


Figure 8-1

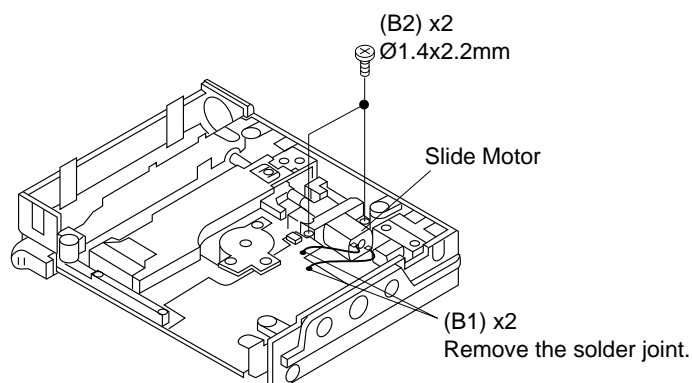


Figure 8-2

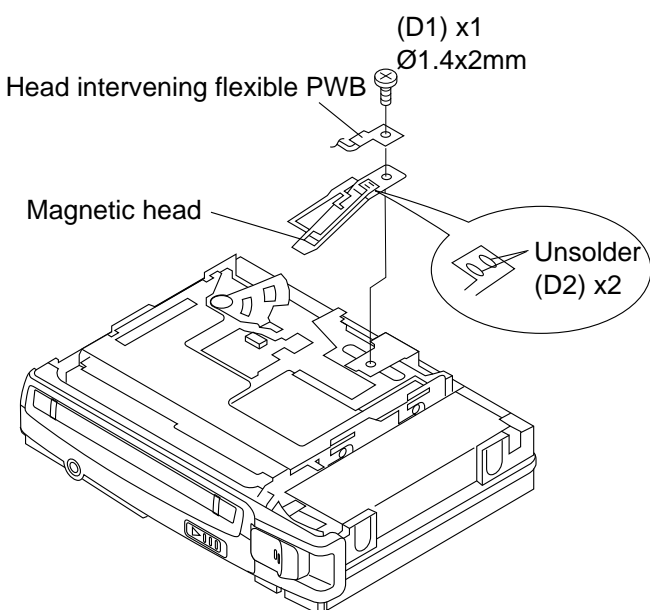


Figure 8-4

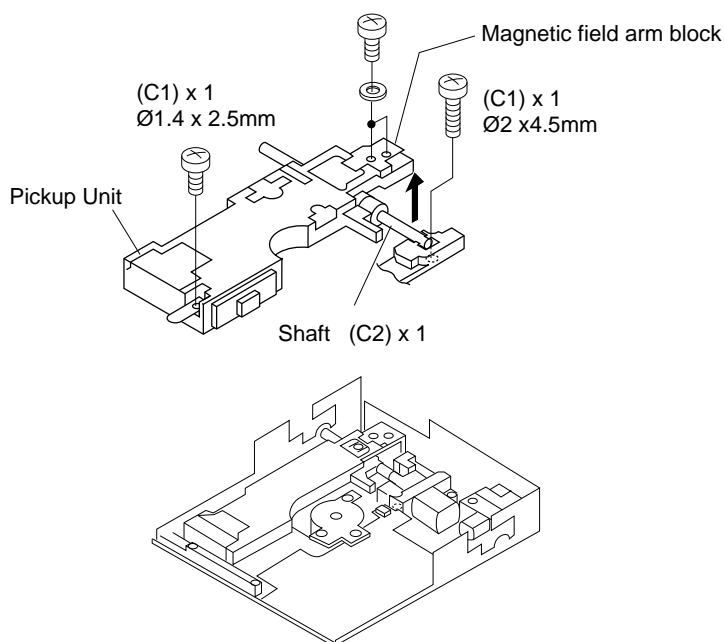


Figure 8-3

ADJUSTMENT

● Test disc

MD adjustment needs two types of disc, namely recording disc (low reflection disc) and playback-only disc (high reflection disc).

	Type	Test disc	Parts No.	Price Code
1	High reflection disc	ESYA 1014 (SONY)	_____	_____
2	Low reflection disc	Recording minidisc	UDSKM0001AFZZ	AZ

Note: Use the low reflection disc on which music has been recorded.

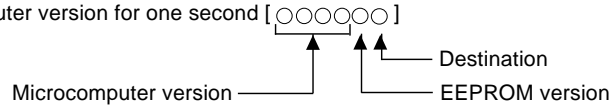
● Entering the TEST mode

1. Setting at port (in standby state, disc-free state or power nonconnected state)

- (1) Set the port as follows.
TEST1 : "Low"
TEST0 : "High"
- (2) Press the PLAY button in the standby state (it is allowed to insert the disc or to connect the power supply).
- (3) Test Mode STOP [_ T E S T _]

2. Setting by special button operation (in standby state)

- (1) Holding down the DISP button and ENTER button, press the PLAY button.
- (2) Normal mode setting initialization (BASS setting, VOL setting, etc.)
- (3) Indication of microcomputer version for one second [○○○○○○]



- (4) Whole LCD lighting for 2 seconds
- (5) Test Mode STOP [_ T E S T _]

*When the PLAY button is pressed during indication (3) and (4), the process proceeds to (5).

● Leaving the TEST mode

- (1) Press the STOP button in the TEST mode stop state or version indicating state or whole LCD lighting state.
- (2) EEPROM rewrite-enable area updating, adjustment error setting (so as to adjust all the items when the power supply is turned on in the normal mode)
- (3) Change to standby state

● Test Mode

1. AUTO Mode	<ul style="list-style-type: none"> Automatic adjustment is performed. (After adjustment the grating adjustment mode is set.) Continuous playback is performed (Error rate indication, jump test). The temperature correction is performed only when servo start is performed, but the posture correction is not performed.
2. MANUAL Mode	<ul style="list-style-type: none"> Temperature is displayed. (Updating in real time) Seeing the displayed measurement value/set value, make manual adjustment to set values within the allowable range. Continuous playback is performed (error rate display, jump test). The temperature correction is performed only when servo start is performed, but the posture correction is not performed.
3. RESULT Mode	<ul style="list-style-type: none"> Adjustment value is indicted. Adjustment value is changed manually. (in servo OFF state).
4. TEST-PLAY Mode	<ul style="list-style-type: none"> Continuous playback from the specified address is performed. 1 line, 10 lines or 400 lines manual jump is performed. C1 error rate display (pit section), ADIP error rate display (groove section) The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous playback.
5. TEST-REC Mode	<ul style="list-style-type: none"> Continuous record from the specified address is performed. Change of record laser output(servo gain is also changed according to laser output). The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous recording.
6. INNER Mode	<ul style="list-style-type: none"> Determine the position where the INNER switch is turned on.(only high reflection disc). The temperature correction is performed only when servo start is performed, but the posture correction is not performed.
7. NORMAL Mode	<ul style="list-style-type: none"> The mode is changed from the TEST mode to the normal mode without adjustment. In the normal mode the internal operation mode, memory capacity, etc. are indicated. In the normal mode both temperature correction and posture correction are performed.
8. Digital input display Mode	<ul style="list-style-type: none"> Digital input information is displayed.
9. Error data display Mode	<ul style="list-style-type: none"> Error information is displayed. Error information is initialized.
10. E ² -PROM setting mode	<ul style="list-style-type: none"> Factors of digital servo are changed manually. (Each servo is turned on individually.) Cut-off frequency of BASS1, BASS2 and BASS3 is selected manually. Temperature detection terminal voltage is measured, and the reference value is set. Defaults are selected and set. Setting of EEPROM protect area is updated. (In case of protect releasing)

MD-MS200W/MD-MS200/MD-MS200H

● Operation in each TEST mode

1. AUTO Mode

- When the STOP button is pressed while the AUTO menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- As for operation during continuous playback refer to [Explanation of TEST-PLAY mode].
- Adjustment NG: If the measurement value of adjustment FEO is out of range, focus ON failure occurs or adjustment error or TZC error occurs.
- When the high reflection disc is used, ※※ changes as follows.
TEO — FEO — Hf — Hg — Hb — Hf
- When the low reflection disc is used, ※※ changes as follows.
TEO — FEO — lf — Lg — Lb — Lf — Gl — Gg — Gb — Lf
- Grating adjustment: When the focus servo and spin servo are ON.

- ※※※ : Adjustment name
- ○○ : Measurement value
- ●● : Set value
- □□□□ : Address

Step No.	Operation and state	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button.	
Step 3	AUTO menu.	[A U T O]
Step 4	PLAY button --> Slide shift to innermost periphery	
Step 5	Automatic adjustment	[※※ ○○ ●●]
Step 6	End of adjustment	
Step 7	When adjustment is OK, the process proceeds to (8). When adjustment is NG, the process proceeds to (13).	
Step 8	Grating adjustment, adjustment value output	[A D J . O K]
Step 9	When the PLAY button is pressed, the process proceeds to (10). When the STOP button is pressed, the process proceeds to (12).	
Step 10	Continuous playback (pit section) Continuous playback (groove section)	[S Q □□□□] [A P □□□□]
Step 11	STOP button	
Step 12	Test mode STOP state	[T E S T]
Step 13	Adjustment value output	[A D J . N G]
Step 14	STOP button	
Step 15	Test mode STOP state	[T E S T]

2. MANUAL Mode

Step No.	Operation and state	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 1 times (Or SKIP DOWN button x 9 times)	
Step 5	MANUAL menu	[M A N U A L]
Step 6	PLAY button	
Step 7	Temperature measurement	[T M P : ◆◆]
Step 8	SKIP UP button	
Step 9	Tracking error offset measurement	[T E O : ○○]
Step 10	SKIP UP button	
Step 11	Focus error offset measurement	[F E O : ○○]
Step 12	SKIP UP button—Laser lighting	[L O N : _ _]
Step 13	SKIP UP button— Slide shift to innermost periphery	
Step 14-a	Focus gain rough adjustment (high reflection)	[H f ○○ ●●]
Step 14-b	Focus gain rough adjustment (low reflection)	[L f ○○ ●●]
Step 15	SKIP UP button	
Step 16-a	Pit:Tracking gain adjustment (high reflection)	[H g ○○ ●●]
Step 16-b	Pit:Tracking gain adjustment (low reflection)	[L g ○○ ●●]
Step 17	SKIP UP button	
Step 18-a	Pit: Tracking balance adjustment (high reflection)	[H b ○○ ●●]
Step 18-b	Pit: Tracking balance adjustment (low reflection)	[L b ○○ ●●]
Step 19	SKIP UP button	
Step 20-a	Pit: Focus gain adjustment (high reflection)	[H f ○○ ●●]
Step 20-b	Pit: Focus gain adjustment (low reflection)	[L f ○○ ●●]

Step No.	Operation and state	Display
Step 21	Step (24) when SKIP UP button, Step (22) when PLAY button.	
Step 22	Pit section continuous playback	[S Q □□□□]
Step 23	When the P-MODE button is pressed, the process proceeds to (20-a) or (20-b).	
Step 24	The high reflection disc is not accepted. When the low reflection disc is used, the process proceeds to (25).	
Step 25	TOTAL signal level adjustment	[G I ○○ ●●]
Step 26	SKIP UP button	
Step 27	Groove: Tracking gain adjustment	[G g ○○ ●●]
Step 28	SKIP UP button	
Step 29	Groove: Tracking balance adjustment	[G b ○○ ●●]
Step 30	SKIP UP button	
Step 31	Focus gain adjustment	[L f ○○ ●●]
Step 32	PLAY button	
Step 33	Groove section continuous playback	[A P □□□□]
Step 34	When the P-MODE button is pressed, the process to (31).	

- Reversing when the SKIP DOWN button is pressed.
- When the VOL UP button is pressed during adjustment, the set value increases, and the new set value is output.
- When the VOL DOWN button is pressed during adjustment, the set value reduces, and the new set value is output.
- When the VOL UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.
- When the STOP button is pressed while the MANUAL menu appears, or during measurement or adjustment, the mode changes to the TEST mode stop state.
- As for operation during continuous playback refer to [Explanation of TEST-PLAY mode].
- ○○ : Measurement value
- ●● : Set value
- □□□□ : Address
- ◆◆ : Temperature code

3. RESULT Mode

Step No.	Operation and state	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 2 times (Or SKIP DOWN button x 8 times)	
Step 5	RESULT menu	[R E S U L T]
Step 6	PLAY button	
Step 7	Indication of measurement value: Tracking error offset	[T E O : ○ ○]
Step 8	SKIP UP button	
Step 9	Indication of measurement value: Focus error offset	[F E O : ○ ○]
Step 10	SKIP UP button	
Step 11	Indication of measurement value: High reflection focus gain	[H f _ _ ● ●]
Step 12	SKIP UP button	
Step 13	Indication of measurement value: High reflection pit tracking gain	[H g _ _ ● ●]
Step 14	SKIP UP button	
Step 15	Indication of measurement value: High reflection pit tracking balance	[H b _ _ ● ●]
Step 16	SKIP UP button	

Step No.	Operation and state	Display
Step 17	Indication of measurement value: Low reflection focus gain	[L f _ _ ● ●]
Step 18	SKIP UP button	
Step 19	Indication of measurement value: Low reflection tracking gain	[L g _ _ ● ●]
Step 20	SKIP UP button	
Step 21	Indication of measurement value: Low reflection pit tracking balance	[L b _ _ ● ●]
Step 22	SKIP UP button	
Step 23	Indication of measurement value: Low reflection TOTAL signal level	[G l _ _ ● ●]
Step 24	SKIP UP button	
Step 25	Indication of measurement value: Low reflection groove tracking gain	[G g _ _ ● ●]
Step 26	SKIP UP button	
Step 27	Indication of measurement value: Low reflection groove tracking balance	[G b _ _ ● ●]
Step 28	STOP button	
Step 29	Test mode STOP state	[T E S T]

- Reversing when the SKIP DOWN button is pressed
- When the VOL UP button is pressed during set value indication, the set value increases, and the new set value is stored in RAM.
- When the VOL DOWN button is pressed during set value indication, the set value decreases, and the new set value is stored in RAM.
- When the VOL UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.
- When the STOP button is pressed while the RESULT menu appears, or during measurement value or set value indication, the mode changes to the TEST mode stop state.
- ○○ : Measurement value
- ●● : Set value

7. TEST/PLAY Mode

Step No.	Operation and state	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 3times (Or SKIP DOWN button x 7 times)	
Step 5	TEST-PLAY menu	[T _ P L A Y]
Step 6	When the DISP button is pressed, the process proceeds to (7). When the PLAY button is pressed, the process proceeds to (9).	
Step 7	TEST-PLAY mode	[A d 0 0 5 0]
Step 8	PLAY button	
Step 9	Continuous playback (pit section) Continuous playback (groove section)	[S Q □ □ □ □] [A P □ □ □ □]
Step 10	STOP button	
Step 11	Test mode STOP state	[T E S T]

MD-MS200W/MD-MS200/MD-MS200H

- When the STOP button is pressed while the TEST-PLAY menu appears, or in TEST-PLAY or continuous playback mode, the mode changes to the TEST mode stop state.
- When the PLAY button is pressed while the TEST-PLAY menu appears, continuous playback is initiated from the current pickup position.
- Whenever the DISP button is pressed in the TEST-PLAY mode, the address changes as follows.
0050 — 03C0 — 0700 — 08A0 — 0050 —
- Whenever the BASS key is pressed in the TEST-PLAY mode, the digit which is changed by the SKIP UP/DOWN button changes as follows.
0050 — 0050 — 0050 — 0050 — 0050 —
- When the SKIP UP button is pressed in the TEST-PLAY mode, the digit of address specified by the BASS button is set to +1h. (0 to F)
- When the SKIP DOWN button is pressed in the TEST-PLAY mode, the digit of address specified by the BASS button is set to -1h. (0 to F)
* When the SKIP UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.
- When the BASS button is pressed in the continuous playback mode, the number of jump lines changes as follows.
1 — 10 — 400 — 1
* After the number of jump lines is indicated for one second, the address indication is restored. [▲▲▲ T R _]
- When the SKIP UP button is pressed in the continuous playback mode, the specified number of lines is jumped in the FWD direction.
- When the SKIP DOWN button is pressed in the continuous playback mode, the specified number of lines is jumped in the REV direction.
* When the SKIP UP/DOWN button is held down, jump is repeated every approx. 100 ms.
- Whenever the DISP button is pressed in the continuous playback mode, the indication changes as follows.

* Pit section

Continuous playback (SUBQ address indication) [S Q □□□□]

Continuous playback (C1 error indication) [C E ☆☆☆☆]

Continuous playback (SUBQ address indication) [S Q □□□□]

* Groove section

Continuous playback (ADIP address indication) [A P □□□□]

Continuous playback (C1 error indication) [C E ☆☆☆☆]

Continuous playback (ADIP error indication) [A E ★★★★★]

Continuous playback (ADIP address indication) [A P □□□□]

• □□□□ : Address

• ☆☆☆☆ : C1 Error rate

• ★★★★★ : ADIP Error rate

• ▲▲▲ : JUMP lines

● Mechanism Adjustment

1. Optical pickup grating inspecting method

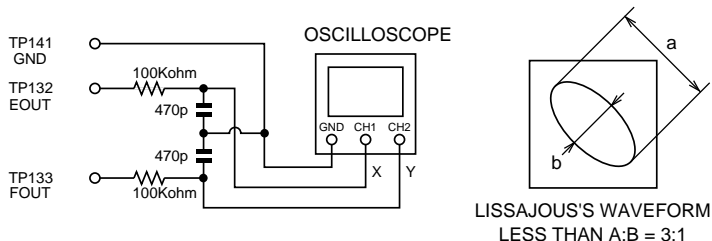
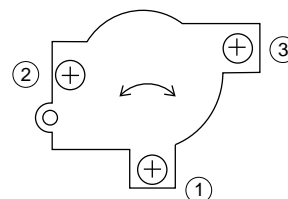
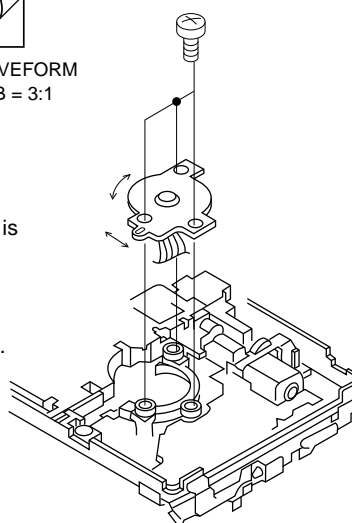


Figure 12-1 OPTICAL PICKUP GRATING DEVIATION MEASURING METHOD

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high reflection MD disc ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spin motor, and make an adjustment, observing the Lissajous's wavefor.
2. After adjustment tighten the screws in order of <1> , <2> , <3> .
3. It confirms Lissajous's wavvform ripple mark once again.



Shifting the spin motor installation position, check the Lissajous's waveform.

Figure 12-2

5. TEST-REC Mode

Step No.	Setting Method	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 4times (Or SKIP DOWN button x 6 times)	
Step 5	TEST-REC menu	[T R E C]
Step 6	When the DISP button is pressed, the process proceeds to (7). When the PLAY button is pressed, the process proceeds to (9).	
Step 7	TEST-REC mode	[A d 0 0 5 0]
Step 8	PLAY button	
Step 9	Continuous playback mode (groove)	[A P □ □ □ □]
Step 10	STOP button	
Step 11	Test mode STOP state	[T E S T]

- When the STOP button is pressed while the TEST-REC menu appears, or in the TEST-REC mode or continuous record mode, the mode changes to the TEST mode stop state.
- When the PLAY button is pressed while the TEST-REC menu appears, the continuous record is initiated from the current pickup position.
- Whenever the DISP button is pressed in the TEST-REC mode, the address changes as follows.
0050 — 03C0 — 0700 — 08A0 — 0050 —
- Whenever the BASS button is pressed in the TEST-REC mode, the digit which is changed by the SKIP UP/DOWN button changes as follows.
0050 — 0050 — 0050 — 0050 — 0050 —
- When the SKIP UP button is pressed in the TEST-REC mode, the digit of address specified by the BASS button is set to +1h.(0 to F)
- When the SKIP DOWN button is pressed in the TEST-REC mode, the digit of address specified by the BASS button is set to -1h. (0 to F)
* When the SKIP UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.
- When the VOL UP/DOWN button is pressed in the TEST-REC mode or continuous record mode, the laser record power changes.
(Servo gain changes also according to record power.)
* After the laser record power is indicated for one second, the address indication is restored. [R P W ▽ ▽]
- : Address
- ▽▽ : Laser power cord
- Operation is disabled if the premastered disc or disc is in miserase-protected state.

6. INNER Mode

Step No.	Setting Method	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 5 times (Or SKIP DOWN button x 5 times)	
Step 5	INNER menu	[I N N E R]

Step No.	Setting Method	Display
Step 6	PLAY button	
Step 7	INNER switch position measurement	[S Q □ □ □ □]
Step 8	STOP button	
Step 9	Test mode STOP state	[T E S T]

- When the STOP button is pressed while the INNER menu appears, the mode changes to TEST mode stop state.
- : Address

MD-MS200W/MD-MS200/MD-MS200H

7. NORMAL Mode

Step No.	Setting Method	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 6times (Or SKIP DOWN button x 4 times)	

Step No.	Setting Method	Display
Step 5	NORMAL menu	[N O R M A L]
Step 6	PLAY button	
Step 7	TOC read	[Refer to the following description.]
Step 8	Hereafter operation in normal mode	

- When the STOP button is pressed while the NORMAL menu appears, the mode changes to the TEST mode stop state.

- Indication during operation

Indication of memory capacity on main unit LCD [* * * ◇ ◆ ○ ○ ○ ○] + Level meter

- * * * : TNO
- ◇ : Internal mode
- ◆ : Servo state (#3: Slide, #2: Tracking, #1: Spin, #0: Focus)
- ○ ○ ○ : Address

LCD remote control [◇ ◆ ○ ○ ○ ☆] + TNO indication

- ◇ : Internal mode
- ◆ : Servo state (#3: Slide, #2: Tracking, #1: Spin, #0: Focus)
- ○ ○ : Address
- ☆ : Memory capacity (graphic indication)

- Selection of sound volume, BASS, etc. is possible (without indication)
- Recording is also possible.

8. Digital input display mode

Step No.	Setting Method	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 7times (Or SKIP DOWN button x 3 times)	
Step 5	Digital input indication menu	[D I N M O N]
Step 6	PLAY button	

Step No.	Setting Method	Display
Step 7	FS code, channel status indication	[C f f f f f]
Step 8	SKIP UP button	
Step 9	U bit indication 1	[U 1 ■ ■ ☒ ☒]
Step 10	SKIP UP button	
Step 11	U bit indication 2	[U 2 † † ‡ ‡]
Step 12	STOP button	
Step 13	Test mode STOP state	[T E S T]

- When the STOP button is pressed while the digital input indication menu appears or during digital input information indication, the mode changes to the TEST mode stop state.

- In case of analog input or digital input unlocking the indication data is _.

- f f : Control Code

- f f f f : Category code

- ■ ■ : TNO

- ☒ ☒ : INDEX

- † † : TIME(min.)

- ‡ ‡ : TIME(Sec.)

9. Error data display Mode

Step No.	Setting Method	Display
Step 1	Test mode STOP state	[T E S T]
Step 2	BASS button	
Step 3	AUTO menu	[A U T O]
Step 4	SKIP UP button x 8times (Or SKIP DOWN button x 2 times)	
Step 5	Error data indication menu	[E D A T A]
Step 6	PLAY button	
Step 7	Indication of error data 0	[E 0 ◇◇]
Step 8	SKIP UP button	
Step 9	Indication of error data 1	[E 1 ◇◇]
Step 10	SKIP UP button	
Step 11	Indication of error data 2	[E 2 ◇◇]
Step 12	SKIP UP button	
Step 13	Indication of error data 3	[E 3 ◇◇]
Step 14	SKIP UP button	
Step 15	Indication of error data 4	[E 4 ◇◇]
Step 16	SKIP UP button	
Step 17	Indication of error data 5	[E 5 ◇◇]
Step 18	SKIP UP button	
Step 19	Indication of error data 6	[E 6 ◇◇]
Step 20	SKIP UP button	
Step 21	Indication of error data 7	[E 7 ◇◇]
Step 22	SKIP UP button	
Step 23	Indication of error data 8	[E 8 ◇◇]
Step 24	SKIP UP button	
Step 25	Indication of error data 9	[E 9 ◇◇]
Step 26	STOP button	
Step 27	Test mode STOP state	[T E S T]

- Reversing when SKIP DOWN button is pressed
- When the STOP button is pressed while the error data indication menu appears or during error data indication, the mode changes to the TEST mode stop state.
- Error data 0 is the latest error.
- Error which occurred in the TEST mode is also stored in the memory.
- When the DISP button is pressed while the error data indication menu appears, the error data is initialized. [C L E A R _]
- ◇◇: Error Code

● Jitter checking method

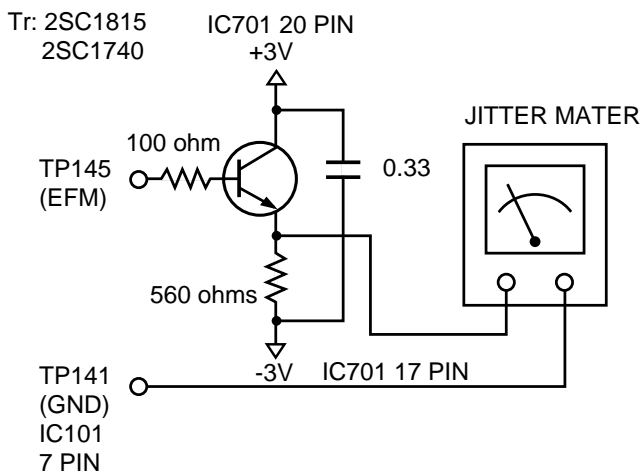


Figure 15

After automatic adjustment is performed in the AUTO mode (low reflection MD disc use TEST mode), jitter must be less than 32 ns.

Error data list

Error Code	Contents
11	Automatic adjustment Gain maximum or error adjustment judgment NG during adjustment retry in TG, FG adjustment.
12	Automatic adjustment Out of allowable range
13	Automatic adjustment Servo retry error (4 times) during adjustment
16	Automatic adjustment TZC error in TG, TB adjustment (TG, TB measurement value does not change.)
17	Automatic adjustment TEO, FEO allowable range error
21	Focus setting disabled
23	Track search time-over
32	P-TOC read disabled
42	U-TOC read disabled
44	U-TOC write disabled
52	Music data write disabled
71	Pickup position initialization error (Inner switch ON failure)
72	EEPROM read error
73	Record head drive disabled (EJECT operation)
82	Overvoltage detection
91	TEMP over

MD-MS200W/MD-MS200/MD-MS200H

● Lead-in switch position adjusting method

Note: Measure the position of lead-in switch in the INNER mode, and fix the position of lead-in switch at SUBQ FF85 to FF02.

After retightening the screw, pressing the mechanism PWB in the arrow direction, measure again the position of lead-in switch. If the removed screw cannot be fit after position adjustment, fix with two screws.

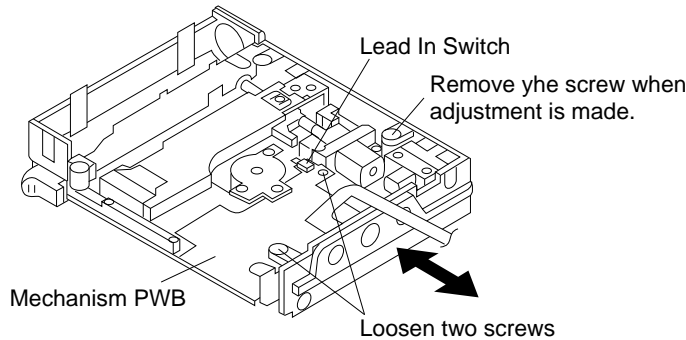


Figure 16-1

● Adjustment of magnetic head mounting position

• When the magnetic head and optical pickup have been replaced, be sure to adjust the mounting position.

• For easier adjustment of mounting position move the optical pickup to the center position, and then adjust the position.

1. Set the transparent disc 3 for adjustment. (*1)

2. Turn off the power supply, turn the head drive gear by hand to lower the head.

3. Viewing the set from above, make an adjustment so that the magnetic head aligns with the optical pickup objective lens.

• Circumferential direction: Slightly loosen the head fixing screw (A), and shift the magnetic head fitting to align the head with the pickup objective lens.

• Radial direction: Turn the magnetic head circumferential adjustment nut (B), and adjust to align the head with the objective lens.

*1: Before setting the disc remove the decoration plate from the disc lid, and fix it as shown in Figure 16-2.

4. Make sure that there is a clearance as shown in Figure 16-2 and that the magnetic head moves up and down smoothly.

5. After adjustment apply Screw Lock to the head fixing screw (A) and adjusted magnetic head radial adjusting screw (B).

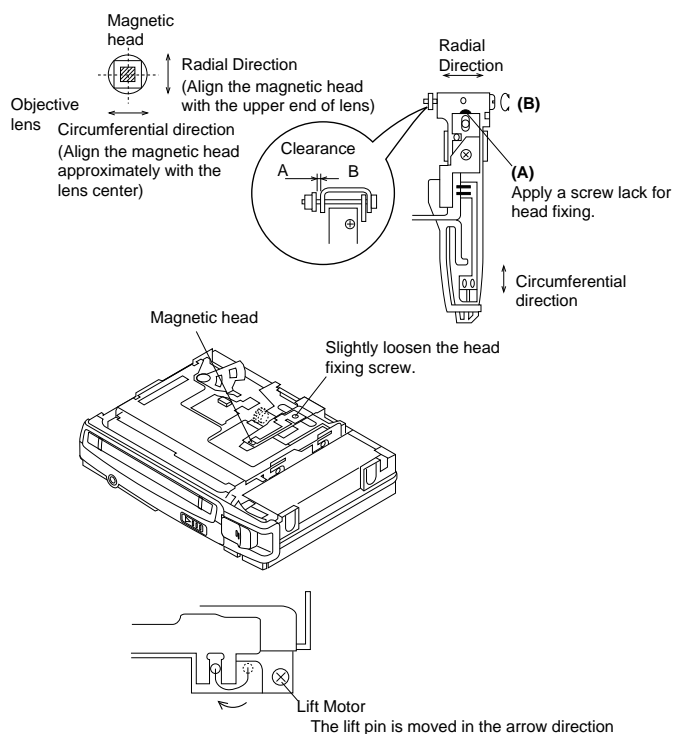


Figure 16-2

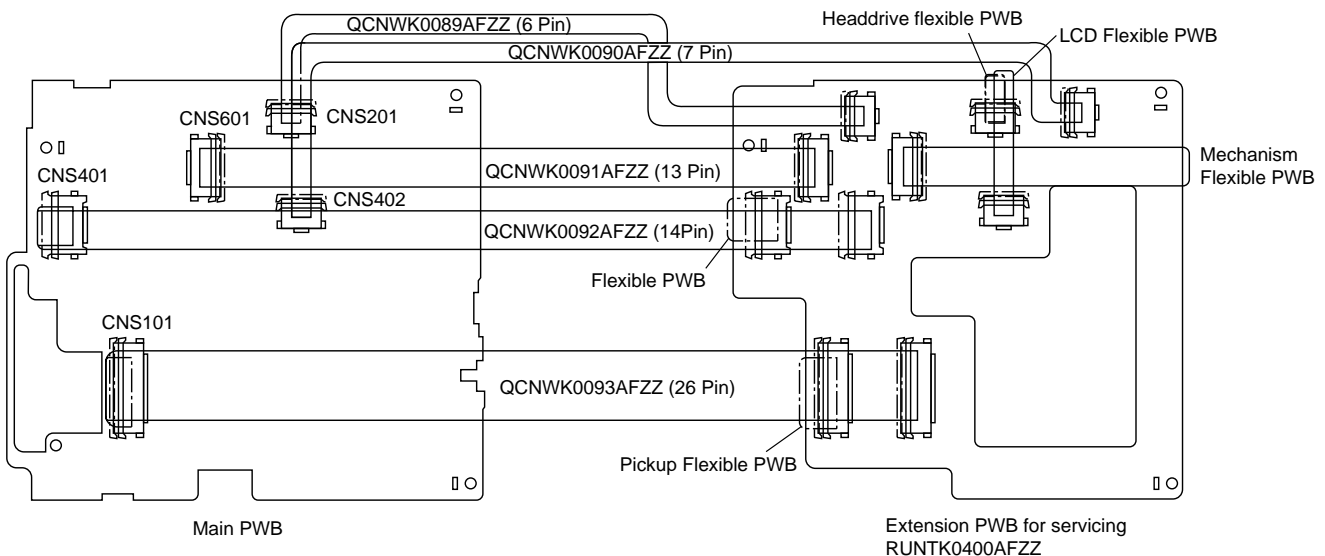


Figure 16-3

E²-PROM (IC402) writing procedure**1. Procedure to replace E²-PROM and write initial value of microcomputer in E²-PROM**

- (1) Replace E²-PROM.
- (2) Deprive E²-PROM of protection (connect the pins 8 and 2 of IC402).
- (3) Refer to the latest E²-PROM data list.
- (4) Press the Display/Lower-case Character button, Enter/Synchro button and Play/Pause button to start the test mode.
- (5) Version display

[V e r . * * * * *]

↑
E²-PROM version (C ~ Z)

↑
Microcomputer ROM version

- (6) The whole LCD lights.
- (7) Test mode stop state
[T E S T]
- (8) Press the Enter/Synchro button.
[E E P R O M]
- (9) Perform the operation to display "E²-PROM SETTING MODE CHART", compare the E²-PROM DATA LIST with the display, and set according to the E²-PROM DATA LIST with the VOL UP or VOL DOWN key.
- (10) Set the temperature reference. (Refer to the Temperature Reference Setting Method.)
- (11) Set according to the E²-PROM DATA LIST.
- (12) Press the Stop button.
[T E S T]
- (13) Press the Stop button.
- (14) After data is written in E²-PROM, turn off power .
- (15) Restore protection of E²-PROM (Disconnect connection made in Step (2) above).

2. Temperature reference setting method (to be performed at room temperature 21 to 29°C)

- (1) Test mode stop state
[T E S T M O D E]
- (2) Measure voltage of TEMP terminal (pin 3, IC401) of microcomputer.
- (3) Calculate the temperature reference, using the following formula.

$$\text{Temperature reference} = \frac{\text{Measured voltage} \times 256}{2.8}$$

- (4) Round down decimal fractions of calculated temperature reference, and convert it to hexadecimal value.
- (5) Correct the temperature according to the table below depending on ambient temperature.

Ambient temperature	Temperature correction
21 - 23	+ 1
24 - 26	± 0
27 - 29	- 1

An example: Environmental temperature is 22°C and set voltage is 1.25V.

$$\begin{aligned} \text{Temperature reference} &= \frac{1.25 \times 256}{2.8} \\ &= 114.286 \\ &= 114 \quad (\text{Decimal fraction is rounded down.}) \\ &= 72_{\text{H}} \quad (\text{Conversion to hexadecimal value}) \end{aligned}$$

- (6) Press the BASS button, and press the SKIP DOWN button.
[E E P R O M]
- (7) Press the PLAY button, and press the SKIP button.
[T e m p]
- (8) Press the PLAY button.
[T E M P ○ ○] ○ ○ : Temperature reference
- (9) Set the temperature standard value to the value obtained above with the VOL UP and VOL DOWN buttons.
- (10) Press the STOP button.
[T E S T]

MD-MS200W/MD-MS200/MD-MS200H

E²-PROM DATA LIST

Focus setting

Item display	Set values
F G _ _ ○○	6 C _H
F F 1 _ ○○	7 0 _H
F F 2 _ ○○	F 0 _H
F F 3 _ ○○	F E _H
F F 4 _ ○○	0 0 _H
F Z H _ ○○	E D _H
F L n _ ○○	F 6 _H
F L f _ ○○	7 F _H
F P n _ ○○	0 0 _H
F P f _ ○○	8 8 _H
F L V _ ○○	2 8 _H
W T f _ ○○	9 0 _H
F S S _ ○○	0 6 _H

Spin setting

Item display	Set values
S P G _ ○○	1 A _H
S P i _ ○○	D 0 _H
S P m _ ○○	A 0 _H
S P o _ ○○	6 8 _H
S P 1 _ ○○	1 0 _H
S P 2 _ ○○	6 0 _H
S P 3 _ ○○	F 2 _H
S P 4 _ ○○	F 2 _H
S P 5 _ ○○	1 0 _H

BASS setting

Item display	Set values
B S 1 _ ○○	0 0 _H
B S 2 _ ○○	0 0 _H
B S 3 _ ○○	0 0 _H

TEMP setting

Item display	Set values
T M _ _ ○○	Calculate values

Tracking setting

Item display	Set values
T G _ _ ○○	4 0 _H
T F 1 _ ○○	E 0 _H
T F 2 _ ○○	E 8 _H
T F S _ ○○	0 0 _H
T B o _ ○○	4 0 _H
T B t _ ○○	6 0 _H
T K o _ ○○	4 8 _H
T K t _ ○○	2 8 _H
T D o _ ○○	7 5 _H
T D t _ ○○	1 A _H
S C o _ ○○	0 0 _H
S C t _ ○○	4 0 _H
S C m _ ○○	5 3 _H
D B O _ ○○	0 0 _H
C H p _ ○○	1 0 _H
C L p _ ○○	F 0 _H
C H r _ ○○	2 0 _H
C L r _ ○○	E 0 _H
W T m _ ○○	9 0 _H

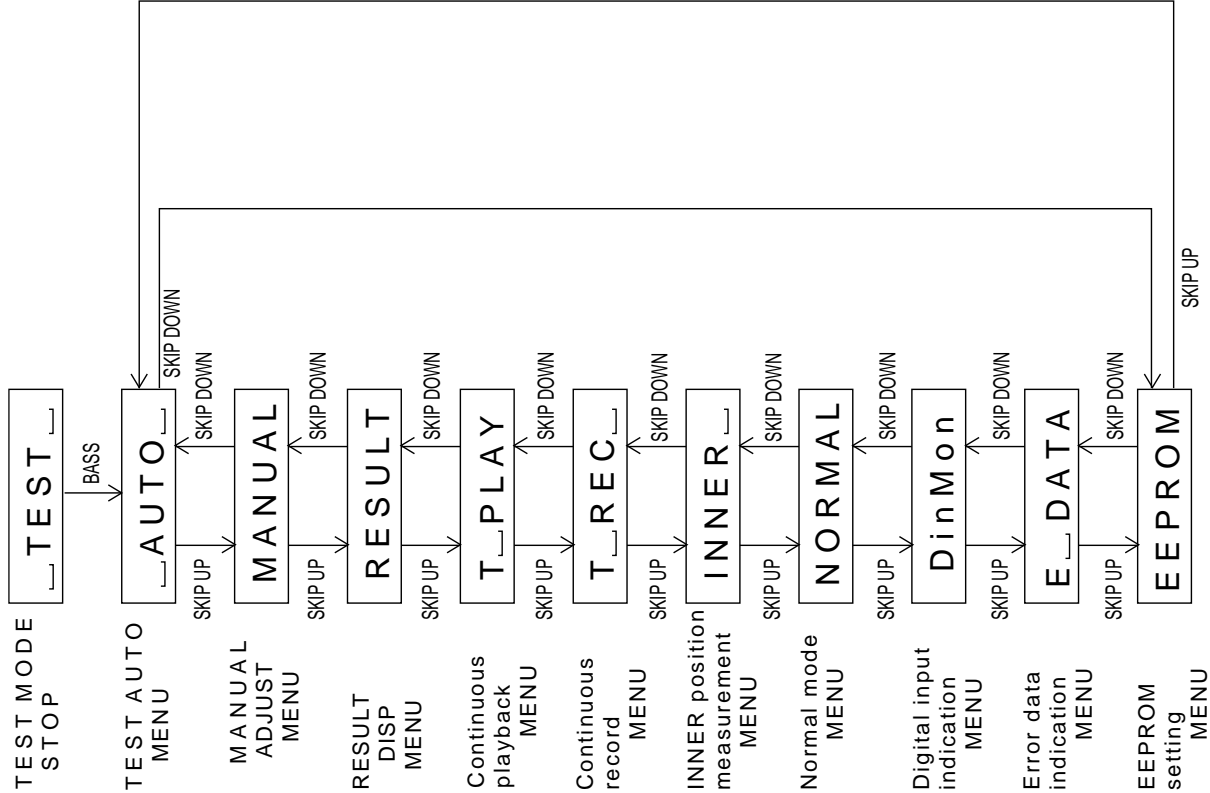
Slide setting

Item display	Set values
S L G _ ○○	8 0 _H
S L 2 _ ○○	1 C _H
S L M _ ○○	7 F _H
S L V _ ○○	2 0 _H
S K k _ ○○	7 8 _H
S K t _ ○○	5 0 _H
S K m _ ○○	7 8 _H

Control setting

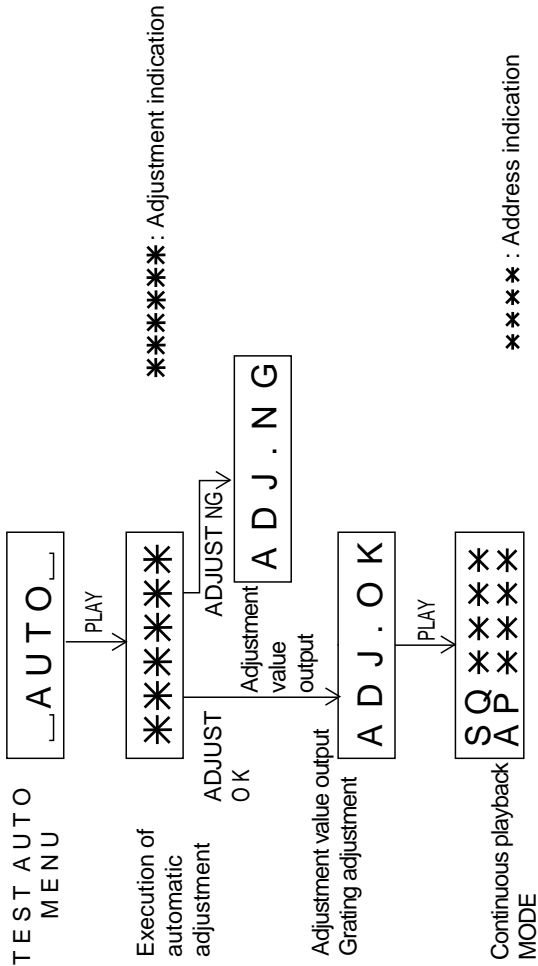
Item display	Set values	Item display	Set values
T B A _ ○○	A 8 _H	C 2 4 _ ○○	1 F _H
C T 1 _ ○○	1 3 _H	C 2 5 _ ○○	2 3 _H
C T 2 _ ○○	A 8 _H	C 2 6 _ ○○	2 5 _H
C T 3 _ ○○	0 2 _H	C 2 7 _ ○○	3 1 _H
C 0 0 _ ○○	0 0 _H	C 2 8 _ ○○	2 C _H
C 0 1 _ ○○	9 0 _H	C 2 9 _ ○○	2 1 _H
C 0 2 _ ○○	8 3 _H	C 3 0 _ ○○	1 E _H
C 0 3 _ ○○	0 5 _H	C 3 1 _ ○○	1 4 _H
C 0 4 _ ○○	1 3 _H	C 3 2 _ ○○	8 5 _H
C 0 5 _ ○○	0 8 _H	C 3 3 _ ○○	8 6 _H
C 0 6 _ ○○	2 6 _H	C 3 4 _ ○○	8 5 _H
C 0 7 _ ○○	2 0 _H	C 3 5 _ ○○	8 7 _H
C 0 8 _ ○○	8 0 _H	C 3 6 _ ○○	0 5 _H
C 0 9 _ ○○	0 0 _H	C 3 7 _ ○○	C 0 _H
C 1 0 _ ○○	1 0 _H	C 3 8 _ ○○	0 7 _H
C 1 1 _ ○○	0 0 _H	C 3 9 _ ○○	7 0 _H
C 1 2 _ ○○	1 E _H	C 4 0 _ ○○	0 9 _H
C 1 3 _ ○○	0 8 _H	C 4 1 _ ○○	4 0 _H
C 1 4 _ ○○	5 C _H	C 4 2 _ ○○	0 B _H
C 1 5 _ ○○	1 D _H	C 4 3 _ ○○	2 0 _H
C 1 6 _ ○○	1 F _H	C 4 4 _ ○○	0 D _H
C 1 7 _ ○○	1 F _H	C 4 5 _ ○○	1 0 _H
C 1 8 _ ○○	2 0 _H	C 4 6 _ ○○	6 5 _H
C 1 9 _ ○○	2 3 _H	C 4 7 _ ○○	5 0 _H
C 2 0 _ ○○	2 4 _H	C 4 8 _ ○○	5 0 _H
C 2 1 _ ○○	1 D _H	C 4 9 _ ○○	1 5 _H
C 2 2 _ ○○	1 E _H	C 5 0 _ ○○	D 4 _H
C 2 3 _ ○○	1 E _H		

● Test Mode Change Chart



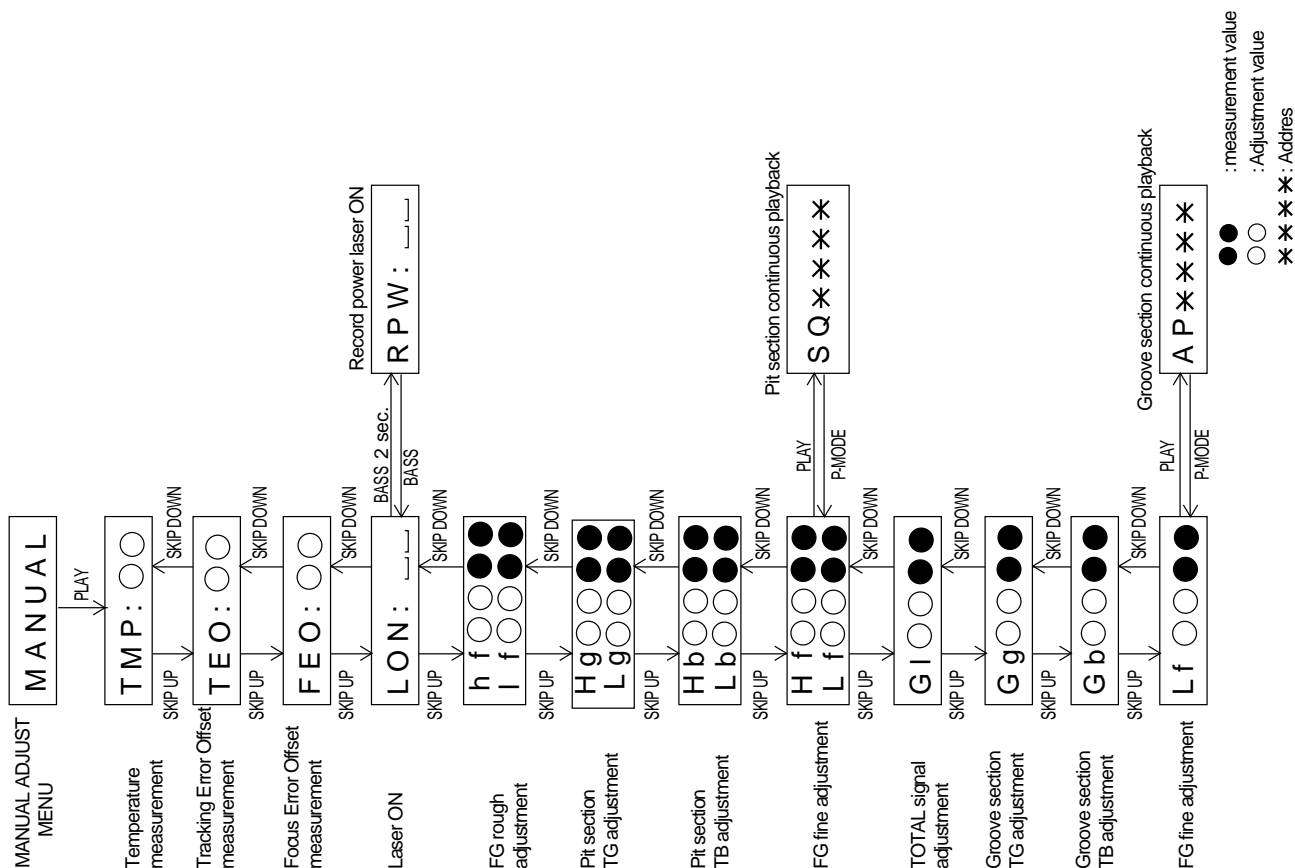
• When the STOP key is pressed in the specific mode, the mode changes to the TEST mode stop state.

● Test Auto Change Chart



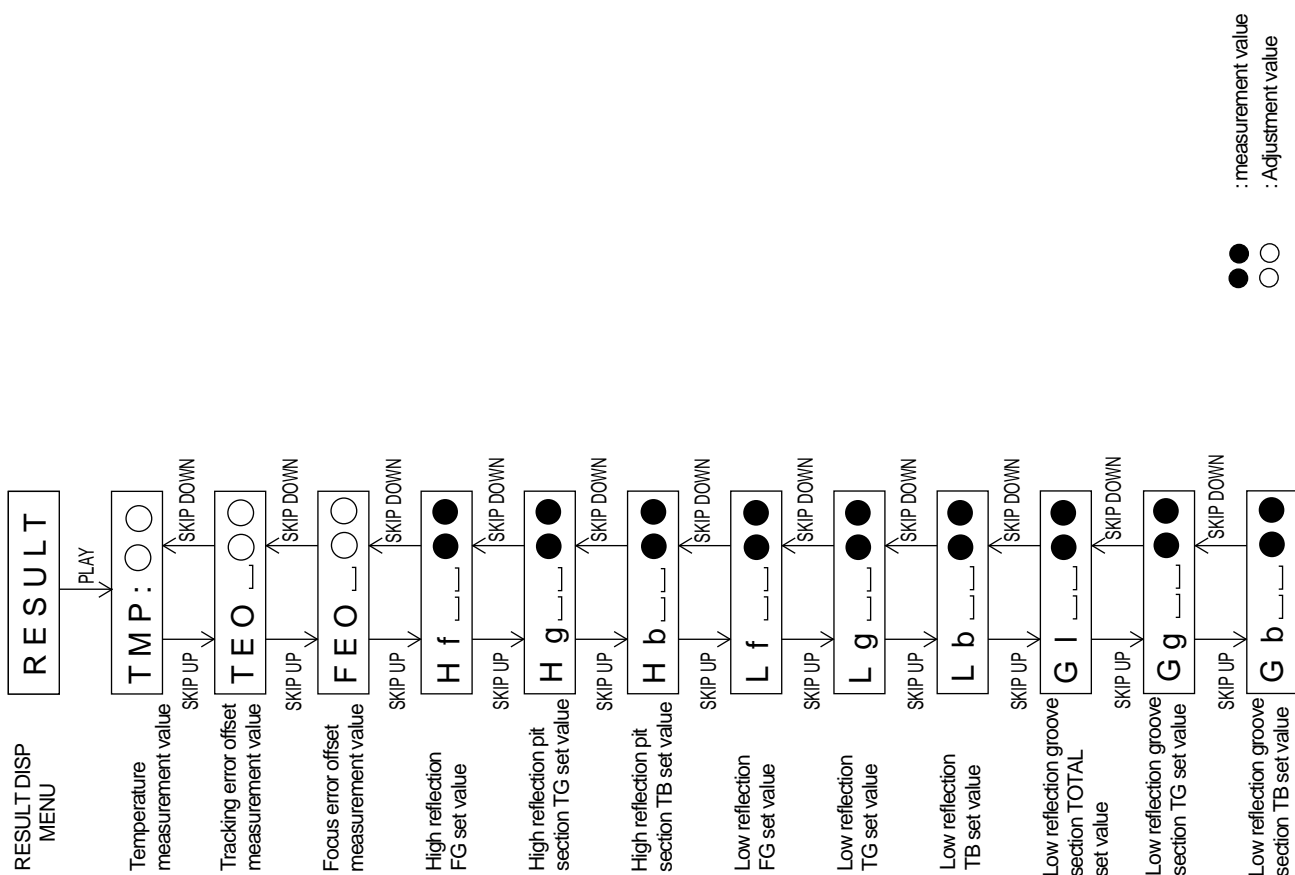
• When the STOP key is pressed in the specific mode, the mode changes to the TEST mode stop state.

● Manual Adjustment Change Chart



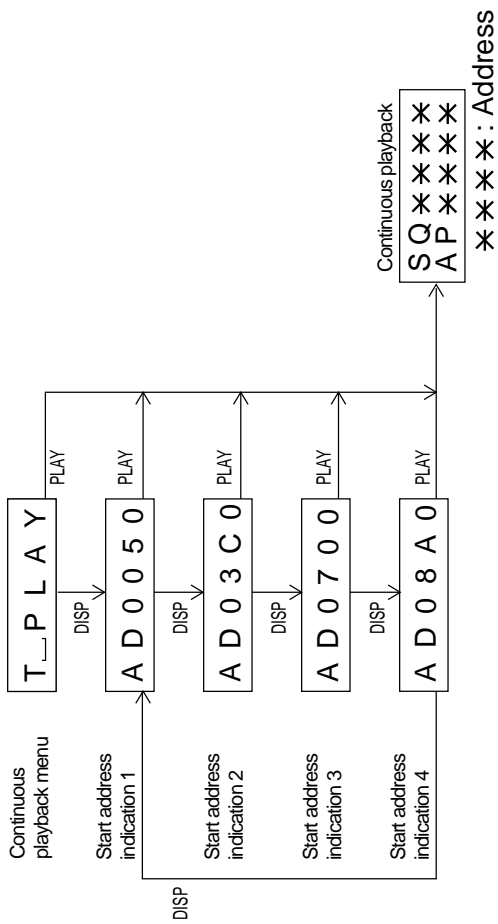
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.

● Result Indication Change Chart



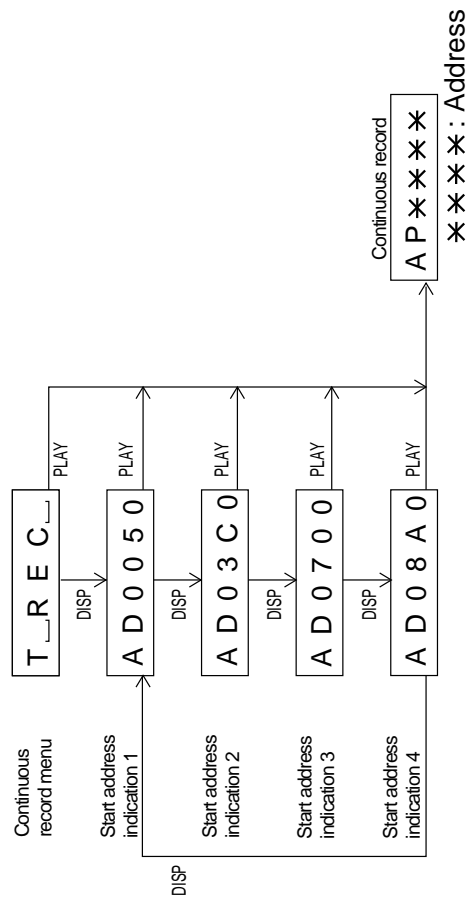
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

Continuous Playback Change Chart



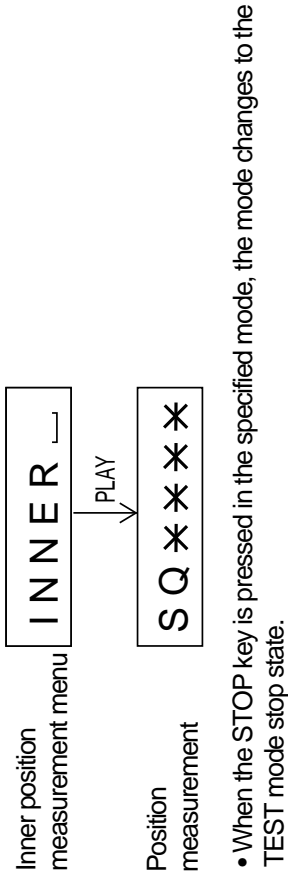
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.
- When the SKIP UP/DOWN key is pressed in the start address indication state, the address of specific digit changes.
- When the BASS key is pressed in the start address indication state, the digit of address which is changed by the SKIP UP/DOWN key is changed.

Continuous Record Change Chart



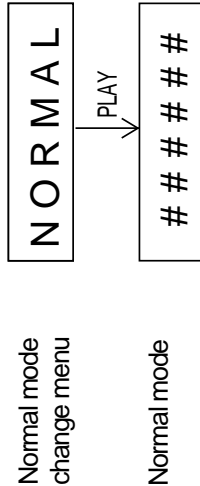
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.
- When the SKIP UP/DOWN key is pressed in the start address indication state, the address of specific digit changes.
- When the BASS key is pressed in the start address indication state, the digit of address which is changed by the SKIP UP/DOWN key is changed.
- When the VOL UP/DOWN key is pressed in the start address indication state or continuous record state, the record laser power changes.

Inner Position Measurement Change Chart



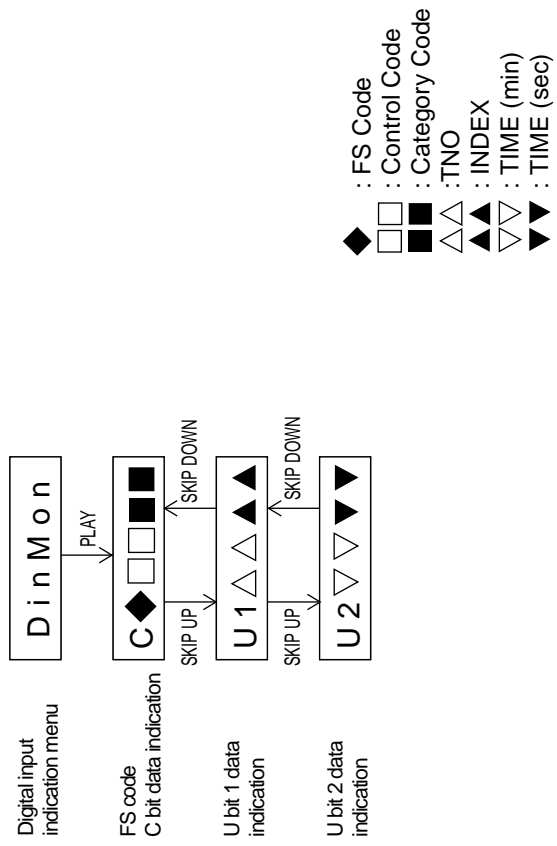
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.

Normal Mode Change Chart



- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.

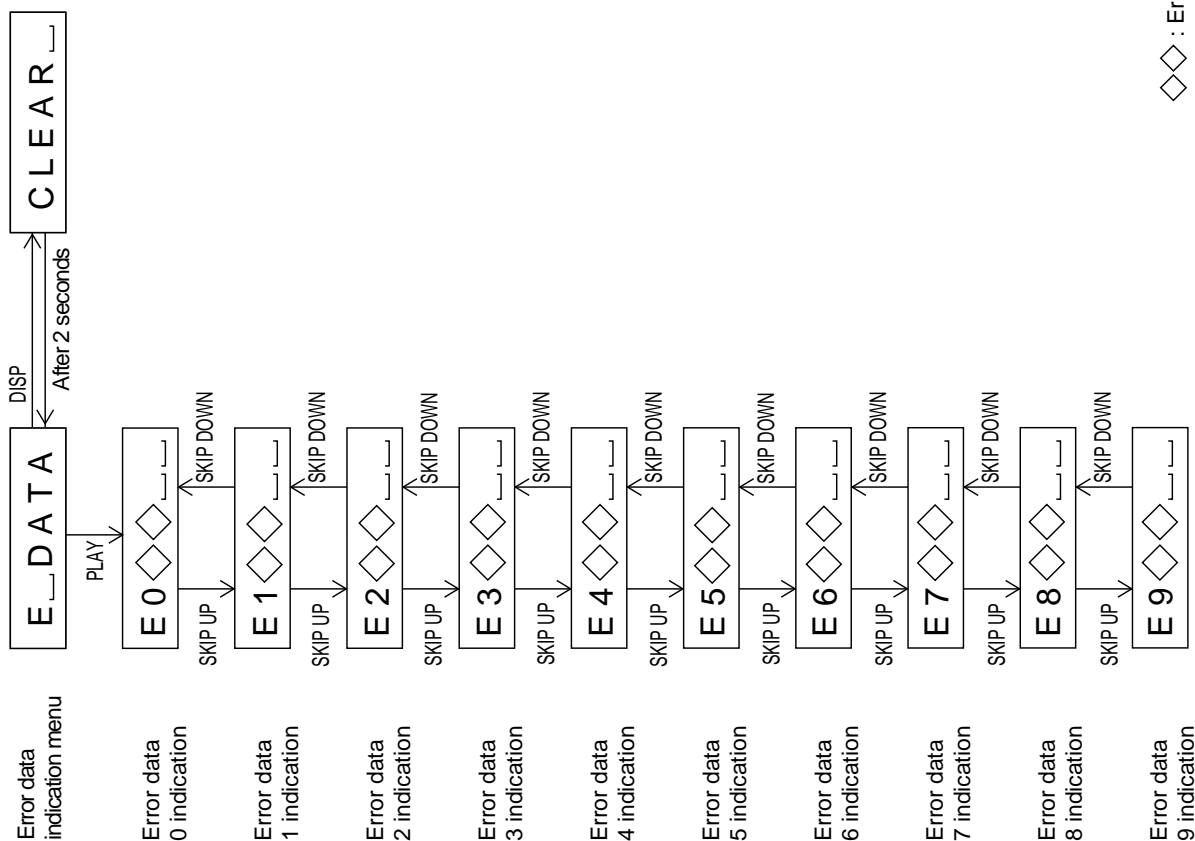
Digital Input Indication Change Chart



- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.

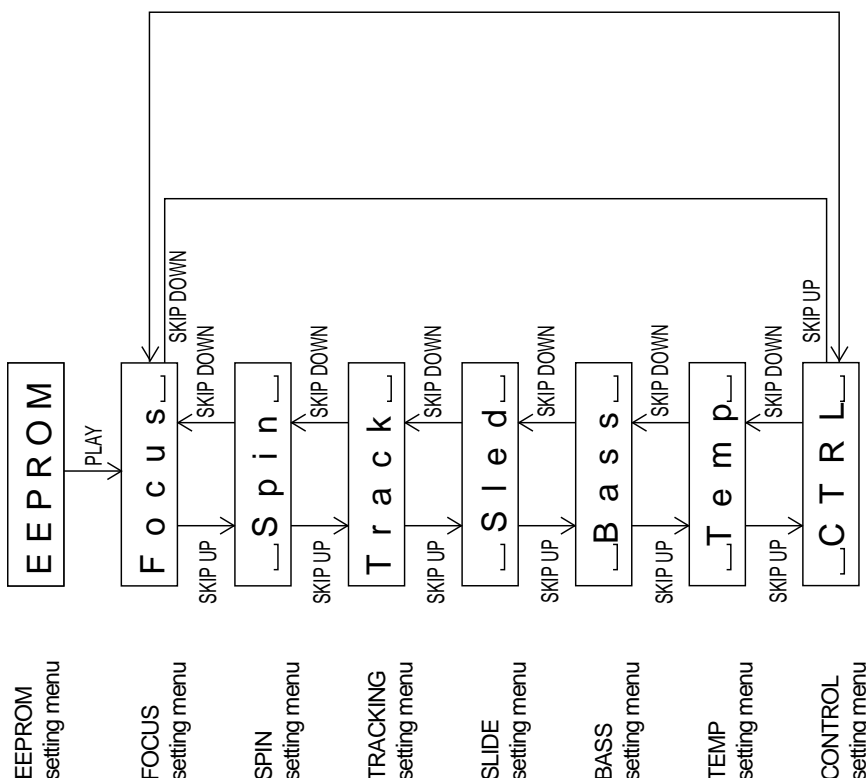
◆ : FS Code
 □ : Control Code
 ■ : Category Code
 ▲ : TNO
 ▼ : INDEX
 ▲ : TIME (min)
 ▼ : TIME (sec)

● Error Data Indication Chart



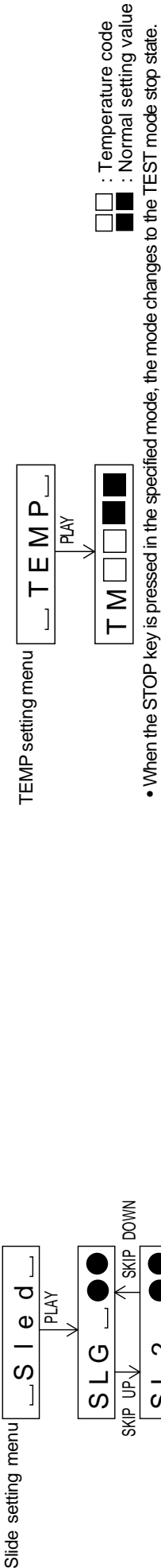
- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

●EEPROM Setting Change Chart

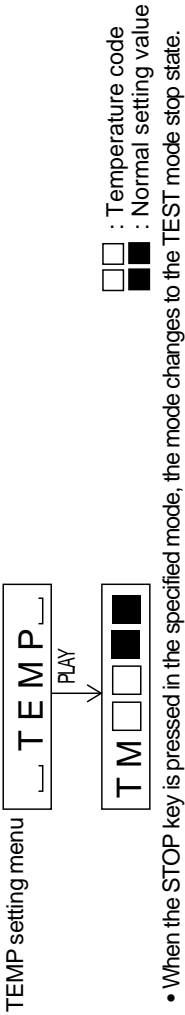


- When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

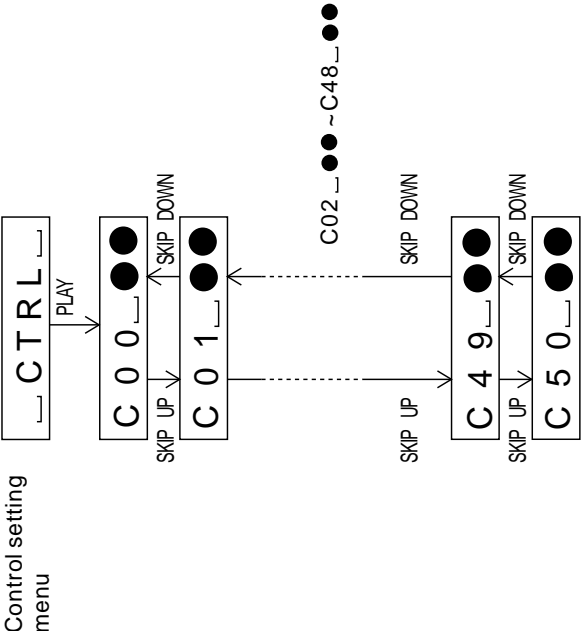
●EEPROM Slide Setting Change Chart



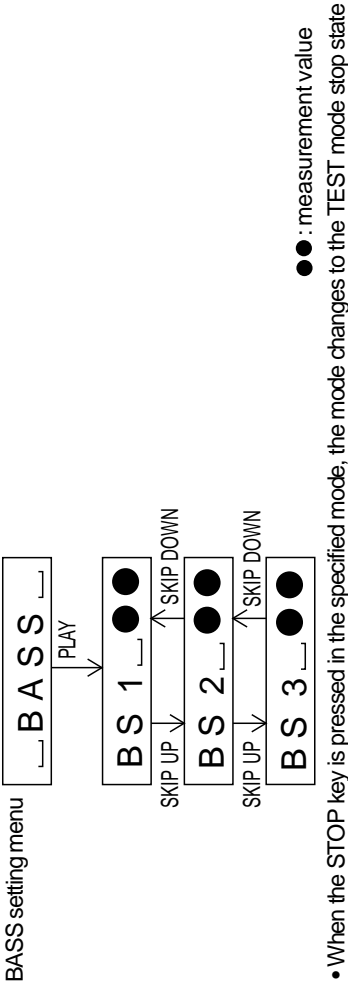
●EEPROM TEMP Setting Change Chart



●EEPROM Control Setting Change Chart

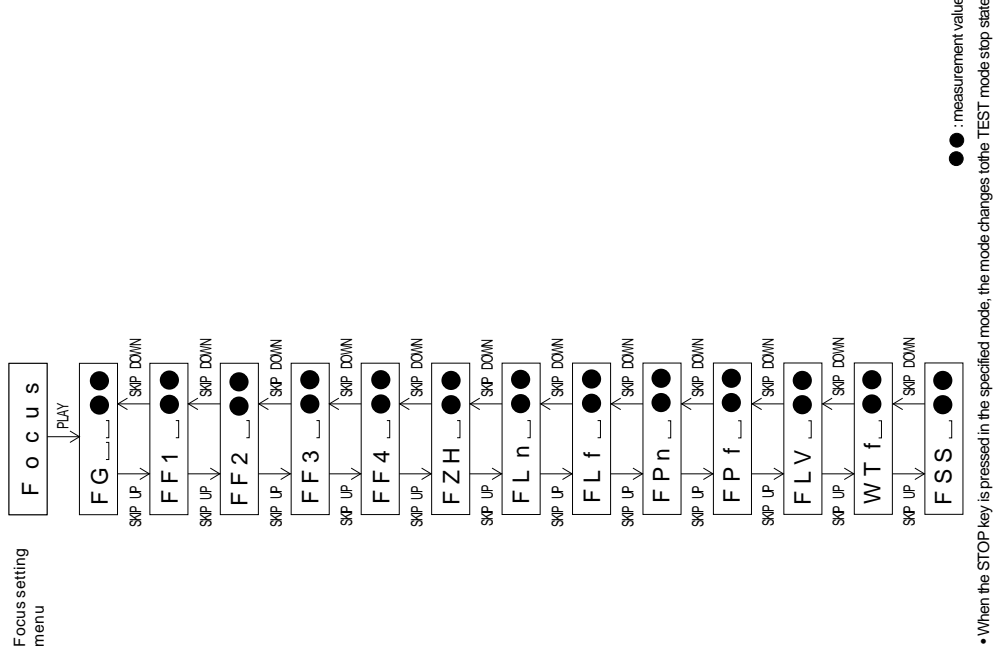


●EEPROM BASS Setting Change Chart



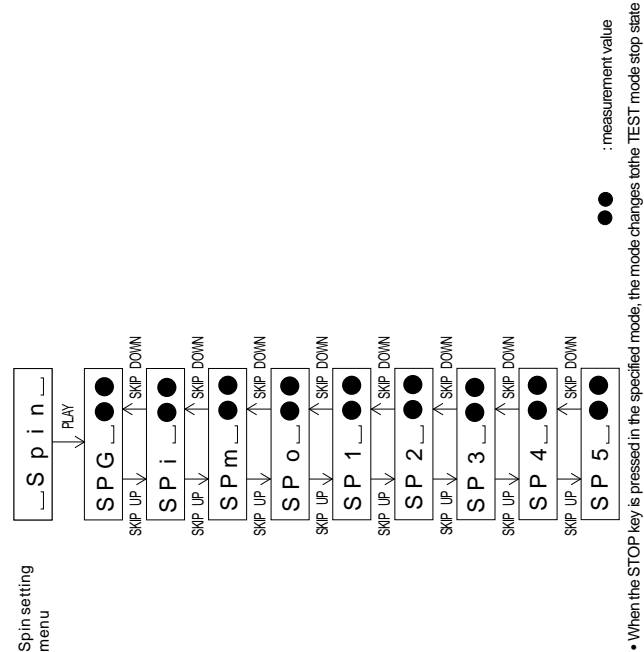
• When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state.

EEPROM Focus Setting Change Chart



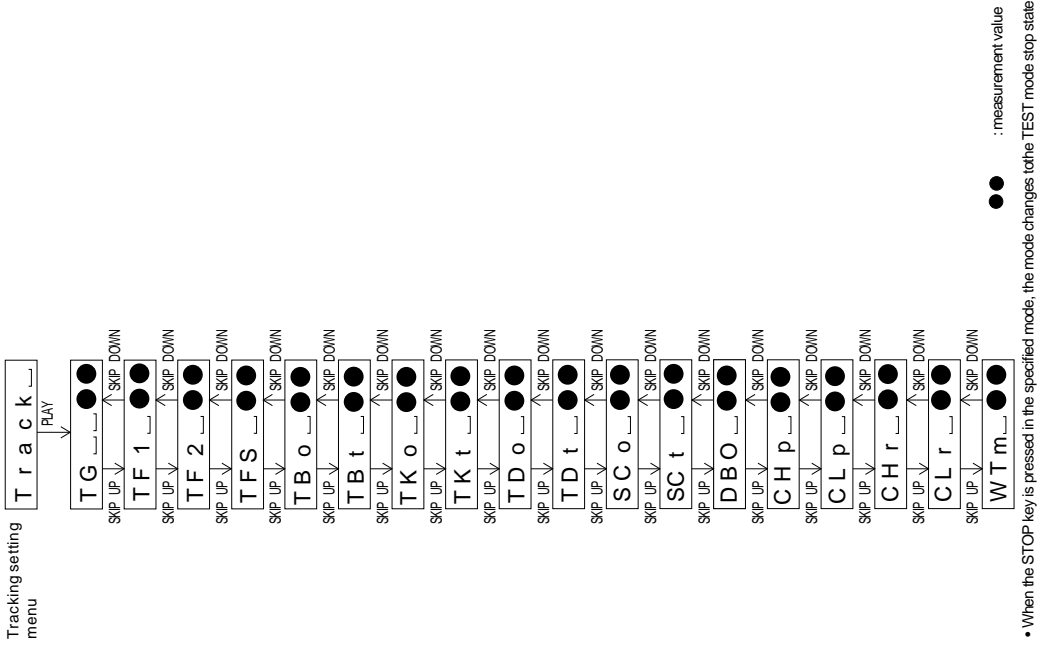
When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

EEPROM Spin Setting Change Chart



When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

EEPROM Tracking Setting Change Chart



When the STOP key is pressed in the specified mode, the mode changes to the TEST mode stop state

EXPLANATION OF ERROR DISPLAY

Error display	Errors	Corrective action
Can't REC	<ul style="list-style-type: none"> Defect occurred 10 times successively during REC-PLAY. During REC-PLAY, the break that full, high temperature memory taped occurred. When reads it, and impossibility tries it again, and an address doesn't hire you in REC state repeatedly for 20 seconds either. 	<ul style="list-style-type: none"> Check that disc is free from flaws, dust, fingerprint, black spots, etc. Check for significant disalignment and runout of disc.
Can't COPY	<ul style="list-style-type: none"> The following judgment was made based on the channel status of digital signal which was input from D-IN during REC-PAUSE or REC-PLAY significant disalignment and runout of disc. <ol style="list-style-type: none"> Other than audio uses Other than home-uses SCNS revealed that copy is impossible. 	<ul style="list-style-type: none"> Record, using the analog cable.
Din UNLOCK	<ul style="list-style-type: none"> The following result occurred when the digital signal was input from D-IN during REC-PAUSE or RECD-PLAY. <ol style="list-style-type: none"> PLL of digital IN was unlocked. 	<ul style="list-style-type: none"> Check for troubles in D-IN signal line.
TOC FULL	<ul style="list-style-type: none"> The domain that music turn and character information (title of a musical composition, disk names) was registered during REC-PLAY. 	<ul style="list-style-type: none"> Replace disc with another record/playback disc having a sufficient area to write UTOC.
UTOC ERROR	<ul style="list-style-type: none"> UTOC recorded in the disc could not be read. Data of UTOC 0 to 4 was looped. 	<ul style="list-style-type: none"> Record, using the analog cable. UTOC data has error. Replace disc with another disc
? DISC	<ul style="list-style-type: none"> "MINI" data of system ID written with ASCII code in TOC is not correct. The disc type written in TOC is not for premastered MD, recording MD or hybrid MD. 	<ul style="list-style-type: none"> The disc is nonstandard disc. Replace disc with another disc, and check.
DISC FULL	<ul style="list-style-type: none"> When an attempt to set REC-PAUSE was made, there was no record-enable area in the disc. 	<ul style="list-style-type: none"> Replace the disc with another record disc having record-enable area.
PB DISC	<ul style="list-style-type: none"> An attempt to set REC-PAUSE or to edit was made on the playback-only disc. 	<ul style="list-style-type: none"> Replace the playback-only disc with record disc.
PROTECTED	<ul style="list-style-type: none"> An attempt to record or edit was made on the record/playback disc whose safety lug has been set to careless protected. Redo on another track. 	<ul style="list-style-type: none"> Release the safety lug, and try again.
TR. PROTECT	<ul style="list-style-type: none"> An attempt was made to edit the write-protected track according to information written in UTOC. 	<ul style="list-style-type: none"> The track which you want to edit is write-erase preventing position.
TOC FULL	<ul style="list-style-type: none"> When an attempt to enter REC-PAUSE or DIVIDE mode or to write the character information was made, the UTOC writing area was full of data. 	<ul style="list-style-type: none"> Replace disc with another record/playback disc having a sufficient area to write UTOC.
Can't EDIT	<ul style="list-style-type: none"> The specific editing conditions were not satisfied in editing. 	<ul style="list-style-type: none"> Operation procedure is not proper. Redo, following the correct operation procedure.
TEMP OVER	<ul style="list-style-type: none"> Because any abnormality occurred, temperature in a set (MD unit) became too high. 	<ul style="list-style-type: none"> It checks it by troubleshooting. It uses it at a place of high temperature, and is there not it?
DISC ERROR	<ul style="list-style-type: none"> Data weren't right or didn't just understand it as a result of having read data. Abnormality occurred during a record of music data, and wasn't able to do a record justly. 	<ul style="list-style-type: none"> Data has error or the disc has flaw. Replace the disc.
TOC ERROR *	<ul style="list-style-type: none"> An attempt to read TOC was made, but it could not be read. It was going to read TOC, but wasn't able to read it. The servo automatic adjustment was not made correctly. 	<ul style="list-style-type: none"> Because it isn't in MD standard, TOC information recorded in DISC tries to turn it into other disk. Because there is wound on a disk, it tries to turn it into a disk else.
UTOC ERROR	<ul style="list-style-type: none"> Error occurred during UTOC rewriting, resulting in UTOC rewriting failure. 	<ul style="list-style-type: none"> Because there is wound on a disk, it tries to turn it into a disk else.
BLANK DISC OCTr 0:00	<ul style="list-style-type: none"> As a result of reading of UTOC it has been revealed that the total TNO number is 0. 	<ul style="list-style-type: none"> Check whether disc is record-enable disc by attempting record.
DEFECT	<ul style="list-style-type: none"> Data cannot be written in the target address data due to track deviation during REC-PLAY. 	<ul style="list-style-type: none"> Check that disc is free from dust, fingerprint and black spot. Check for disalignment and runout of disc.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
- Capacitor:
To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.

(CH), (TH), (RH), (UJ): Temperature compensation
(ML): Mylar type

- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
- Parts marked with “⚠” (⏏ ⏏ ⏏) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW401	DISC COVER OPEN/CLOSE DELECTION	<u>OFF</u> —ON
SW402	HOLD	<u>OFF</u> —ON
SW901	LEAD IN	<u>OFF</u> —ON
SW902,904	DISC MEDIA	<u>OFF</u> —ON
SW903	DISC PROGRAM	<u>OFF</u> —ON

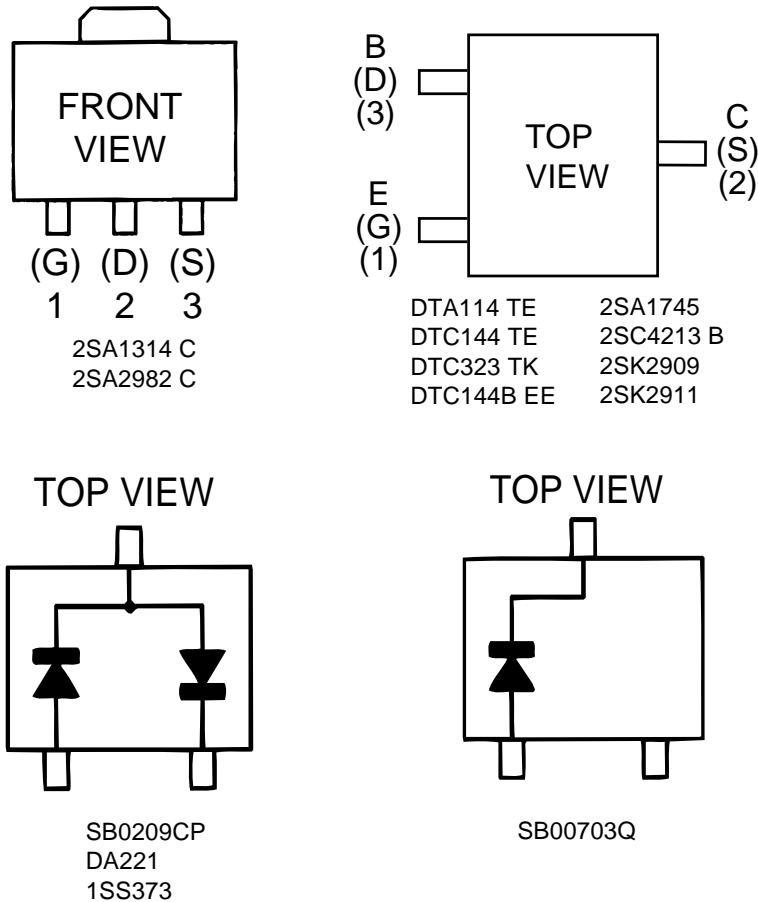


Figure 26 TYPES OF TRANSISTORS AND DIODES

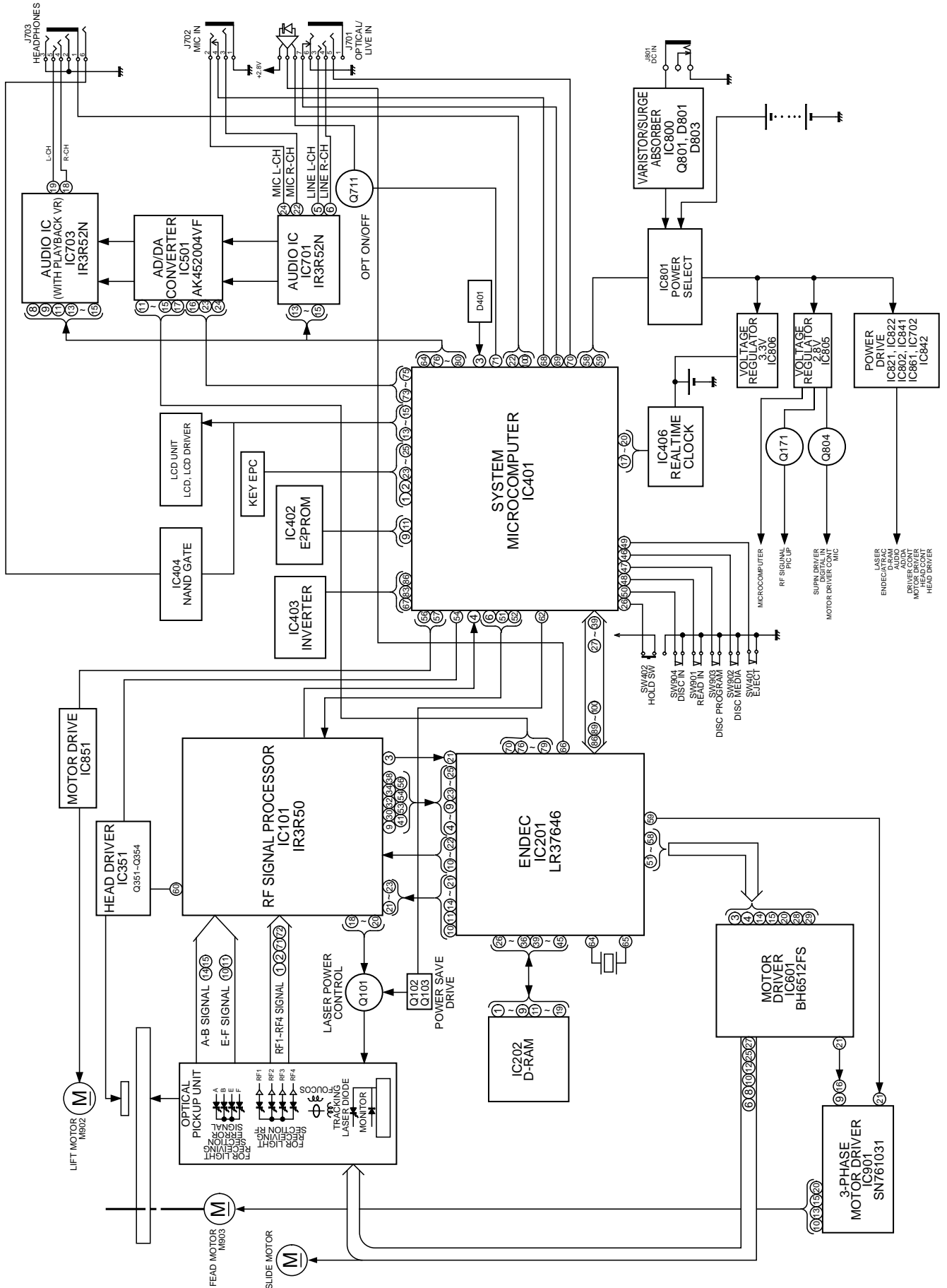
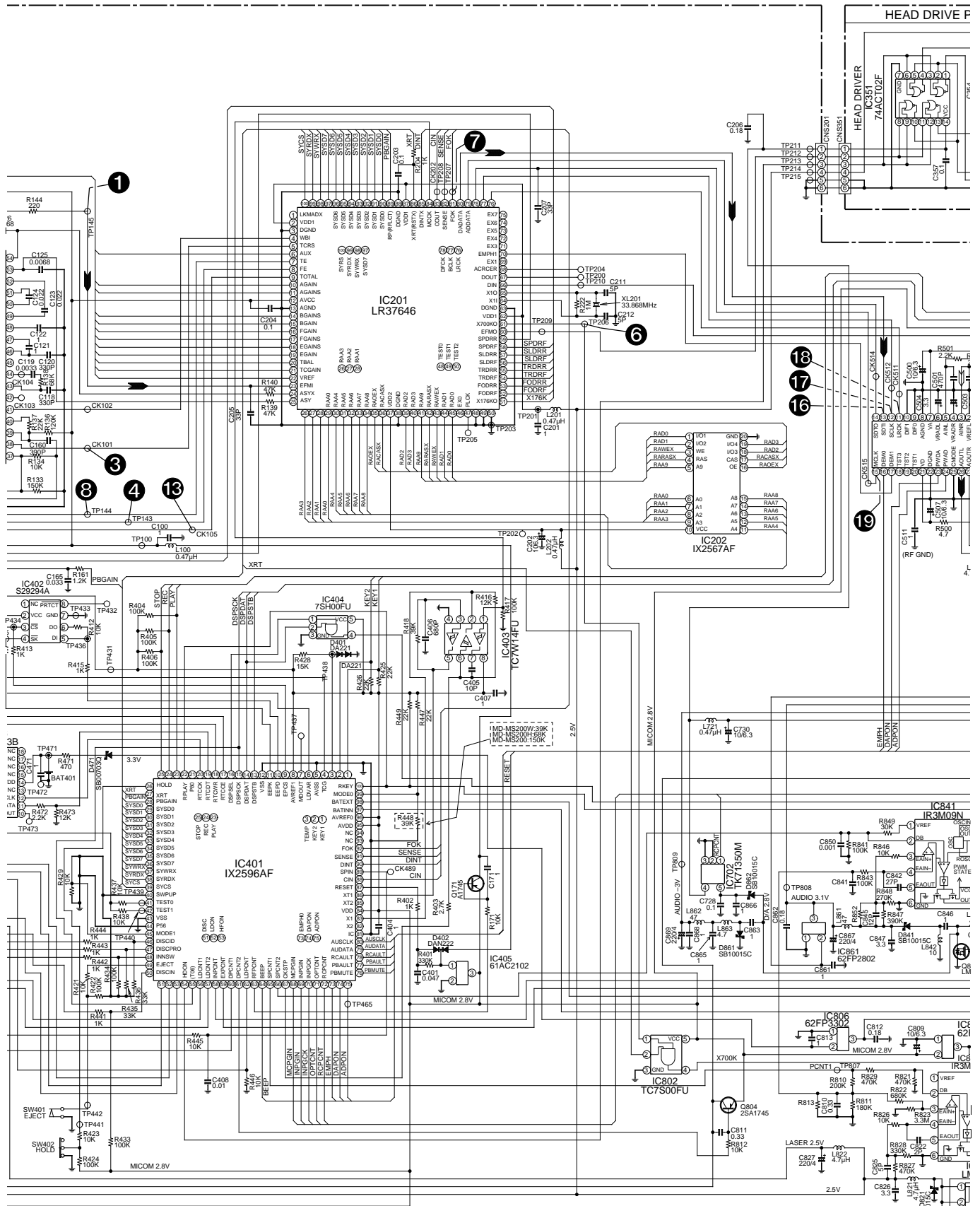


Figure 27 BLOCK DIAGRAM



P28 P29 P30



The numbers ① to ⑱ are waveform numbers shown in page 36.

Figure 29 SCHEMATIC DIAGRAM (2/4)

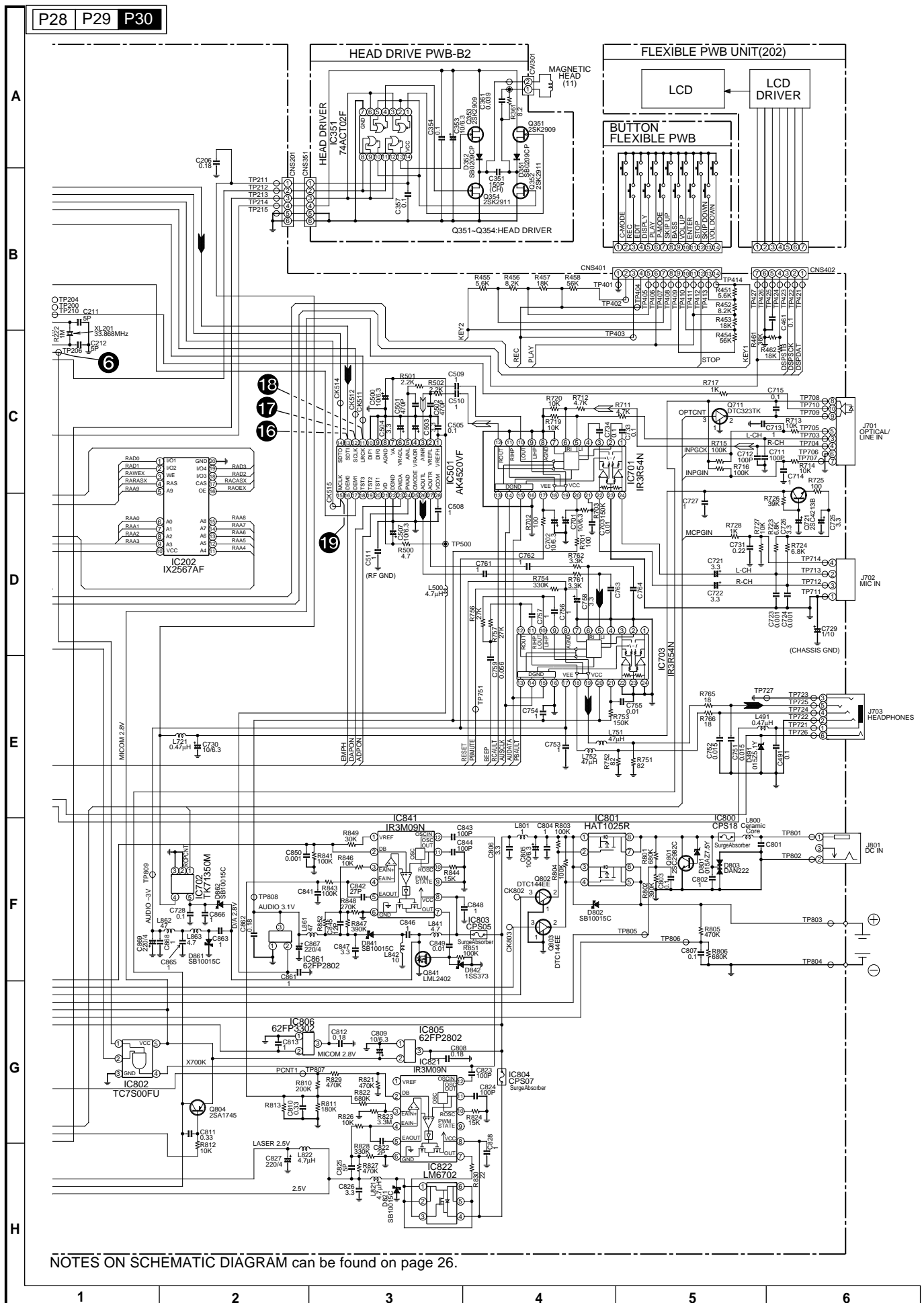


Figure 30 SCHEMATIC DIAGRAM (3/4)

IC101			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0.7V	37	1.3V
2	0.7V	38	0V
3	1.37V	39	1.48V
4	1.37V	40	1.25V
5	1.12V	41	0.7V
6	1.37V	42	1.35V
7	1.37V	43	1.37V
8	1.37V	44	1.3V
9	1.37V	45	1.36V
10	1.37V	46	1.37V
11	1.37V	47	1.34V
12	1.37V	48	0.03V
13	1.37V	49	1.18V
14	1.37V	50	1.16V
15	1.37V	51	0.67V
16	1.37V	52	0.67V
17	1.37V	53	1.35V
18	1.37V	54	1.36V
19	1.34V	55	1.67V
20	2.96V	56	1.16V
21	0V	57	1.37V
22	0.02V	58	1.37V
23	0V	59	0V
24	0.08V	60	1.18V
25	1.37V	61	1.37V
26	1.37V	62	1.34V
27	0V	63	0.2V
28	2.75V	64	0V
29	1.37V	65	2.75V
30	0.9V	66	1.2V
31	1.37V	67	1.17V
32	1.34V	68	0.42V
33	1.37V	69	0.03V
34	1.37V	70	0.3V
35	1.37V	71	0.7V
36	1.37V	72	0.7V

IC201			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	1.27V
2	2.56V	52	0V
3	0V	53	0V
4	0.7V	54	0V
5	0V	55	0V
6	1.38V	56	0V
7	1.36V	57	0V
8	1.34V	58	0V
9	0.9V	59	0V
10	1.4V	60	1.16V
11	1.4V	61	1.26V
12	2.75V	62	2.56V
13	0V	63	0V
14	1.4V	64	1.24V
15	1.4V	65	1.24V
16	1.4V	66	2.28V
17	1.4V	67	1.23V
18	1.4V	68	2.48V
19	1.4V	69	0V
20	1.4V	70	0V
21	1.4V	71	0V
22	1.4V	72	0V
23	1.15V	73	0V
24	1.3V	74	0V
25	1.3V	75	0V
26	0.8V	76	1.27V
27	0.8V	77	1.23V
28	0.65V	78	1.13V
29	1.89V	79	0V
30	0.8V	80	0V
31	1.36V	81	2.55V
32	1.11V	82	0V
33	1.36V	83	2.55V
34	1.36V	84	1.05V
35	2.59V	85	2.55V
36	2.88V	86	2.8V
37	3.6V	87	2.56V
38	0V	88	0V
39	1.5V	89	0V
40	2.06V	90	0.2V
41	1.28V	91	0.4V
42	2.48V	92	0.3V
43	3.42V	93	1.75V
44	2.22V	94	2.09V
45	1.3V	95	1.7V
46	0V	96	1.9V
47	1.11V	97	0.3V
48	0V	98	2.74V
49	0V	99	2.8V
50	0V	100	0.2V

IC403	
PIN NO.	VOLTAGE
1	1.05V
2	1.35V
3	1.33V
4	0V
5	1.33V
6	1.35V
7	1.45V
8	2.8V

IC401			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	2.8V	51	0V
2	2.8V	52	0V
3	1.4V	53	0V
4	0V	54	2.8V
5	0V	55	1.66V
6	0V	56	0V
7	2.27V	57	0V
8	2.8V	58	2.8V
9	2.8V	59	2.8V
10	-	60	2.72V
11	0V	61	0V
12	0V	62	2.76V
13	2.65V	63	0V
14	2.8V	64	2.8V
15	1.66V	65	2.8V
16	2.15V	66	0.77V
17	0V	67	1.36V
18	0V	68	2.62V
19	0V	69	2.74V
20	0V	70	2.76V
21	0V	71	0V
22	2.8V	72	0V
23	2.8V	73	2.8V
24	2.8V	74	2.8V
25	2.8V	75	0V
26	2.8V	76	2.8V
27	2.8V	77	2.8V
28	0V	78	2.8V
29	0.28V	79	2.8V
30	0.43V	80	0V
31	0.3V	81	0V
32	1.5V	82	1.66V
33	1.5V	83	1.34V
34	1.6V	84	2.8V
35	1.8V	85	1.55V
36	0.2V	86	1.36V
37	2.8V	87	2.7V
38	2.8V	88	2.6V
39	0.1V	89	-
40	2.8V	90	2.6V
41	2.8V	91	0V
42	2.8V	92	2.6V
43	0V	93	0V
44	0V	94	0V
45	0V	95	2.8V
46	2.8V	96	2.8V
47	0V	97	2.88V
48	2.8V	98	1.78V
49	0V	99	2.8V
50	0V	100	2.8V

IC404	
PIN NO.	VOLTAGE
1	2.15V
2	0.28V
3	0V
4	2.5V
5	2.8V

IC405	
PIN NO.	VOLTAGE
1	2.8V
2	0V
3	2.8V

IC702	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	5V
5	8.17V

IC202	
PIN NO.	VOLTAGE
1	1.2V
2	1.8V
3	2.47V
4	1.75V
5	1.14V
6	1.39V
7	0.57V
8	0.6V
9	0.6V
10	2.62V
11	0.5V
12	0.98V
13	0.98V
14	0.98V
15	0.98V
16	1.85V
17	1.91V
18	1.3V
19	1.35V
20	0V

IC406	
PIN NO.	VOLTAGE
1	-
2	-
3	-
4	-
5	0V
6	0V
7	0V
8	0V
9	0V
10	0.34V
11	0V
12	0V
13	-
14	3.1V
15	-
16	-
17	-
18	-

IC801	
PIN NO.	VOLTAGE
1	4.83V
2	0V
3	4.89V
4	0V
5	4.9V
6	4.9V
7	4.9V
8	4.9V

IC402	
PIN NO.	VOLTAGE
1	-
2	2.8V
3	2.8V
4	0V
5	0V
6	0V
7	0V
8	0V

IC501			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	2.75V	15	1.68V
2	0V	16	2.8V
3	2.74V	17	0V
4	2.74V	18	0V
5	2.74V	19	0V
6	2.74V	20	0V
7	2.75V	21	2.74V
8	0V	22	0V
9	0V	23	2.8V
10	0V	24	0V
11	1.3V	25	0V
12	1.3V	26	1.37V
13	0V	27	1.37V
14	0V	28	1.37V

IC701			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	-	13	2.8V
2	0V	14	0V
3	-	15	2.8V
4	0V	16	0V
5	0V	17	-3.24V
6	0V	18	0V
7	0V	19	0V
8	0V	20	3.08V
9	0V	21	0.86V
10	0V	22	0V
11	0V	23	0V
12	0V	24	0V

IC703			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	13	2.8V
2	0V	14	0V
3	0V	15	2.8V
4	0V	16	0V
5	0V	17	-3.27V
6	0V	18	0V
7	0V	19	0V
8	1.0V	20	3.12V
9	0V	21	0.85V
10	0V	22	0V
11	0V	23	0V
12	0V	24	0V

IC802	
PIN NO.	VOLTAGE
1	1.3V
2	2.8V
3	0V
4	1.4V
5	2.8V

IC804	
PIN NO.	VOLTAGE
1	0V
2	5.15V
3	0.77V

IC805	
PIN NO.	VOLTAGE
1	0V
2	2.8V
3	4.9V

IC806	
PIN NO.	VOLTAGE
1	0V
2	3.3V
3	5.0V

IC902	
PIN NO.	VOLTAGE
1	2.75V
2	2.75V
3	2.8V
4	2.75V
5	2.75V
6	2.8V

IC901			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	2.75V	13	0V
2	2.73V	14	0V
3	2.75V	15	0V
4	2.75V	16	0.35V
5	0.61V	17	0V
6	0V	18	0V
7	0V	19	0V
8	2.8V	20	0V
9	0V	21	0V
10	0V	22	1.4V
11	0V	23	0V
12	0V	24	0V

IC601			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	17	1.29V
2	2.37V	18	8.34V
3	0V	19	0V
4	0V	20	0V
5	0V	21	0V
6	0V	22	2.62V
7	2.62V	23	0V
8	0V	24	0V
9	0V	25	0V
10	0V	26	2.62V
11	2.62V	27	0V
12	0V	28	0V
13	0V	29	0V
14	0V	30	2.8V
15	0V	31	0V
16	2.73V	32	4.1V

IC851	
PIN NO.	VOLTAGE
1	0V
2	0V
3	2.8V
4	0V
5	0V
6	-
7	-
8	2.6V
9	-
10	-

IC861	
PIN NO.	VOLTAGE
1	0V
2	2.8V
3	3.12V

IC821	
PIN NO.	VOLTAGE
1	1.27V
2	1.23V
3	1.01V
4	1.08V
5	0.86V
6	0V
7	4.2V
8	4.9V
9	2.5V
10	0.41V
11	1V
12	1V

IC822	
PIN NO.	VOLTAGE
1	2.74V
2	2.74V
3	4.16V
4	4.96V
5	2.74V
6	2.74V

IC841	
PIN NO.	VOLTAGE
1	1.22V
2	0.92V
3	1.3V
4	1.27V
5	1.15V
6	0V
7	0.52V
8	4.9V
9	0V
10	0.4V
11	1V
12	1V

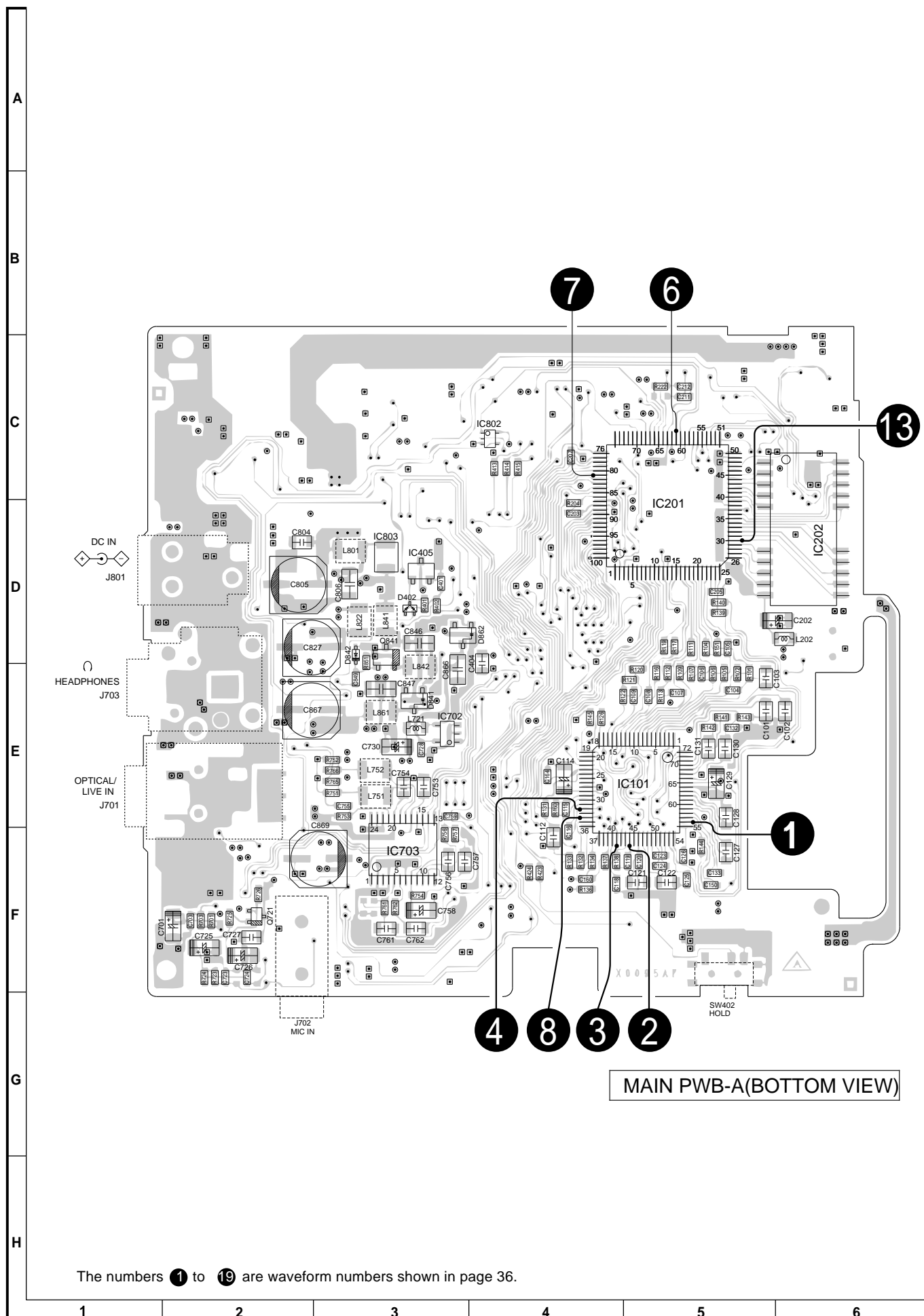
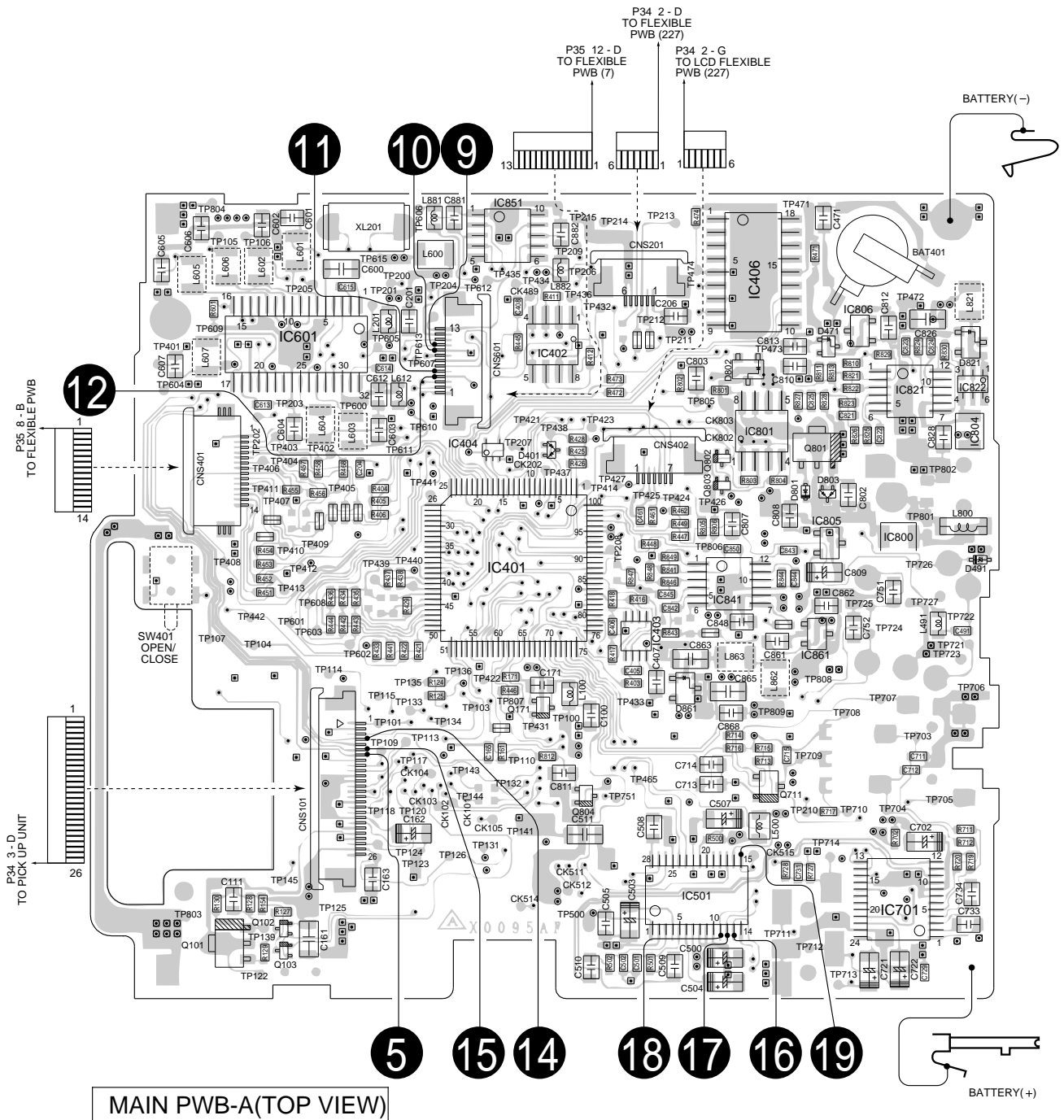


Figure 32 WIRING OF P.W.BOARD (1/4)



COLOR	BR	RD(R)	OR	YL	GR	BL	VL	GY	WH(W)	BK	PK
TABLE	BROWN	RED	ORANGE	YELLOW	GREEN	BLUE	VIOLET	GRAY	WHITE	BLACK	PINK

Figure 33 WIRING OF P.W.BOARD (2/4)

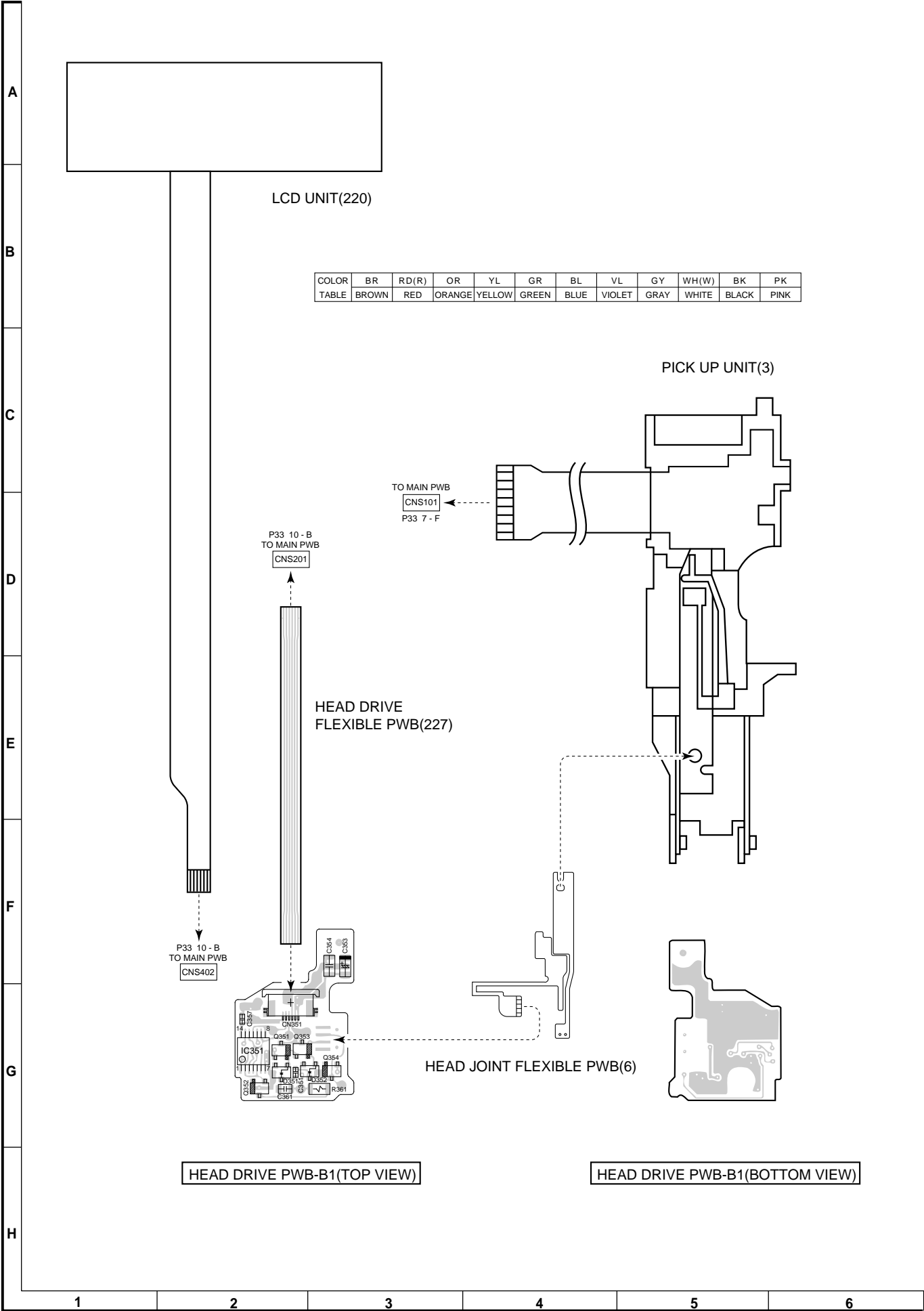
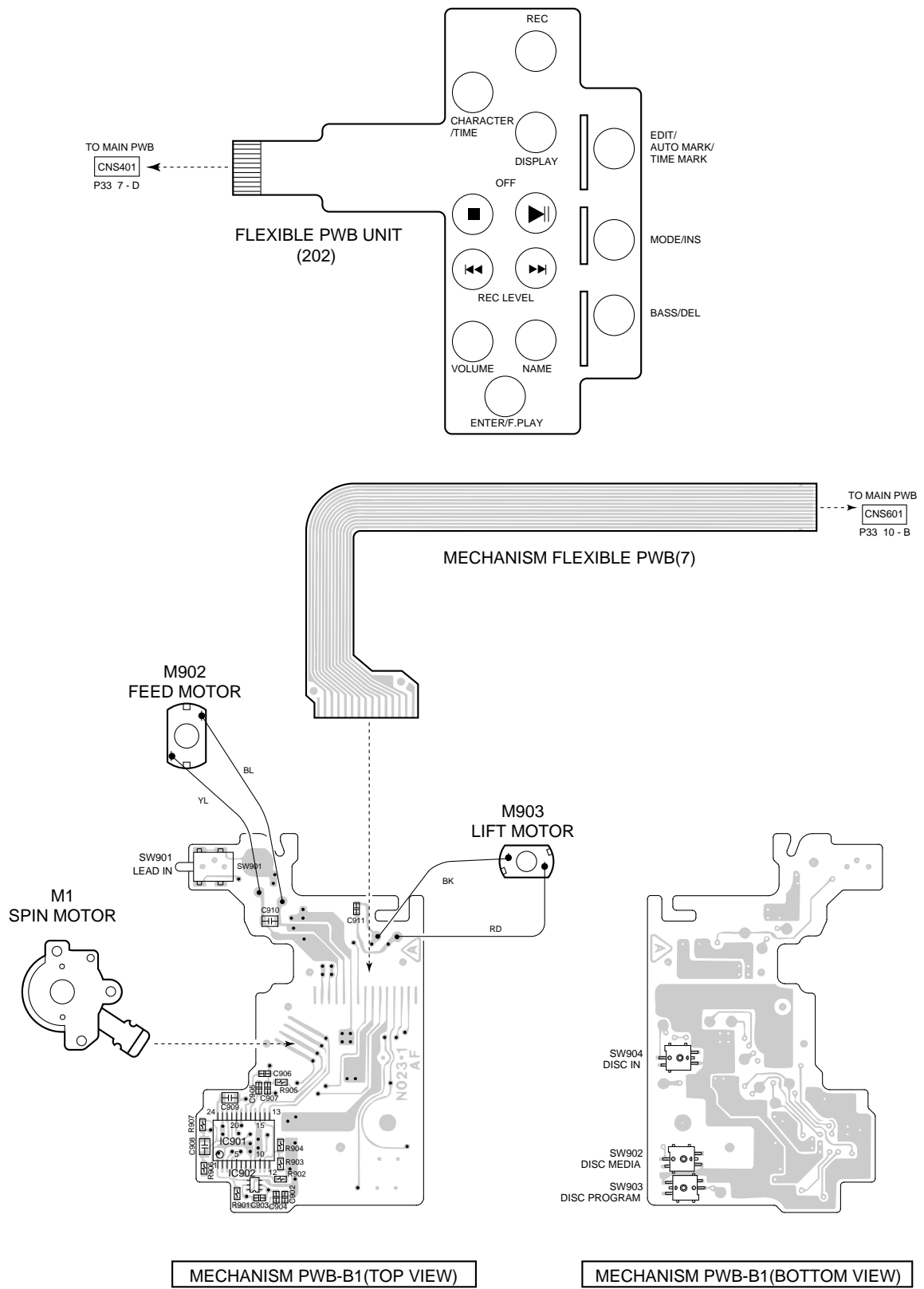


Figure 34 WIRING OF P.W.BOARD (3/4)

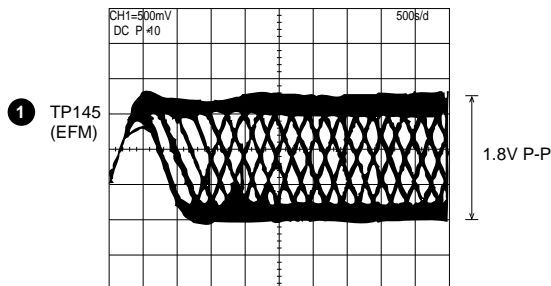


7	8	9	10	11	12
---	---	---	----	----	----

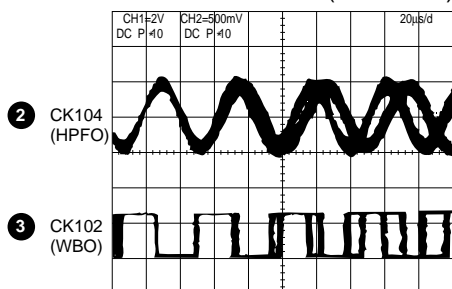
Figure 35 WIRING OF P.W.BOARD (4/4)

WAVEFORMS OF CD CIRCUIT

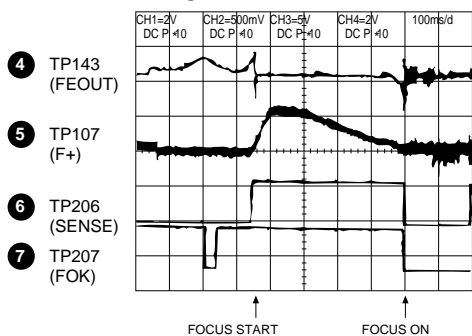
PLAY Condition



PLAY Condition (MO DISC)

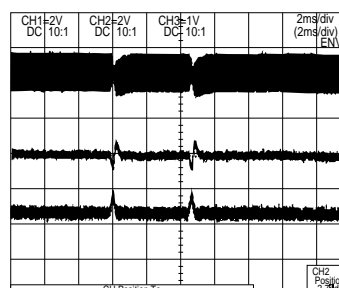
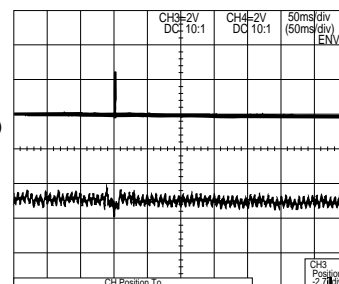
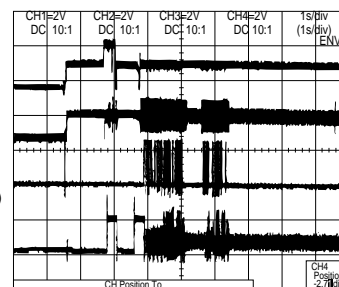
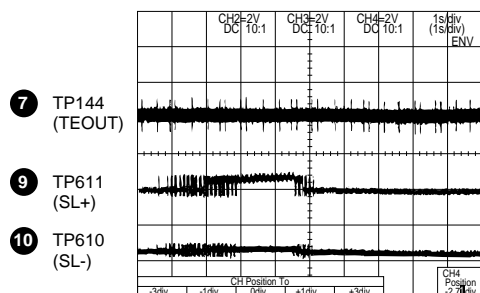
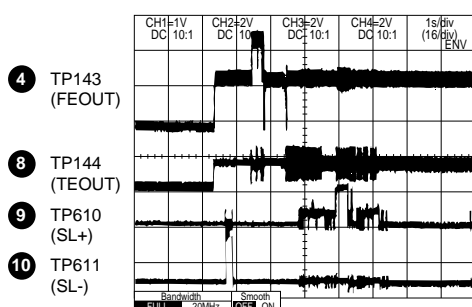


STAND-BY → PLAY

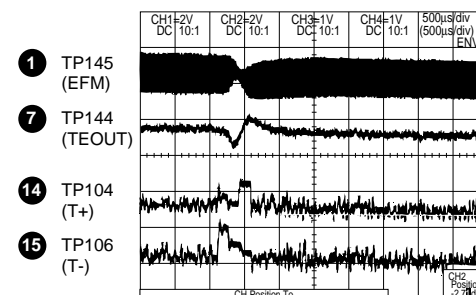
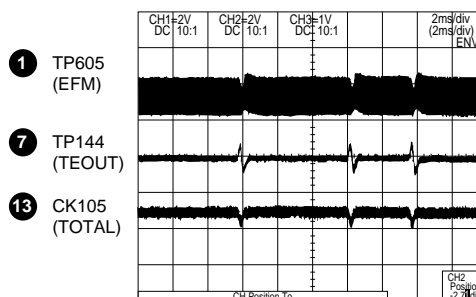


STAND-BY MODE → PLAY MODE

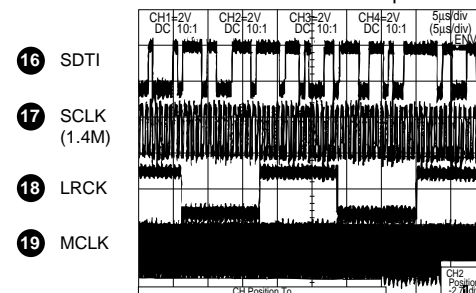
PIT



Groove



AD/DA Converter Input



TROUBLESHOOTING

It is advisable to use the TEST mode (refer to Error Data Display Mode, P15) indicating the causes of troubles before starting repair. Causes of operation errors (up to 10 errors) are recorded as error codes. This information is useful for repair.

When does not function

When the CD section does not operate When the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.

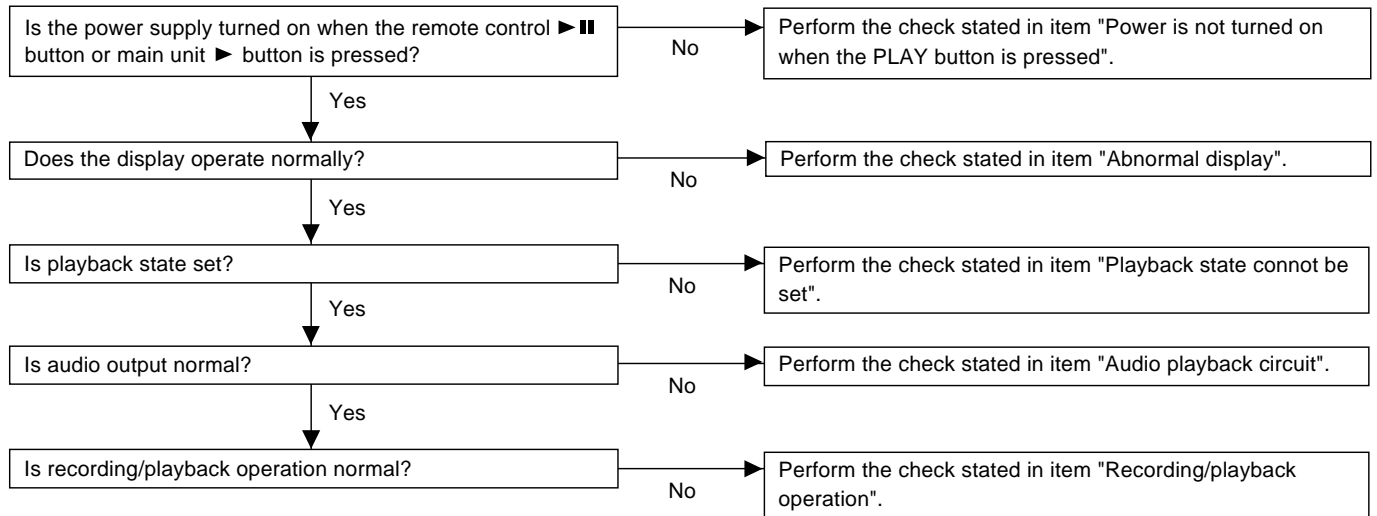
Remove the cabinet and follow the troubleshooting instructions.

"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust or other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

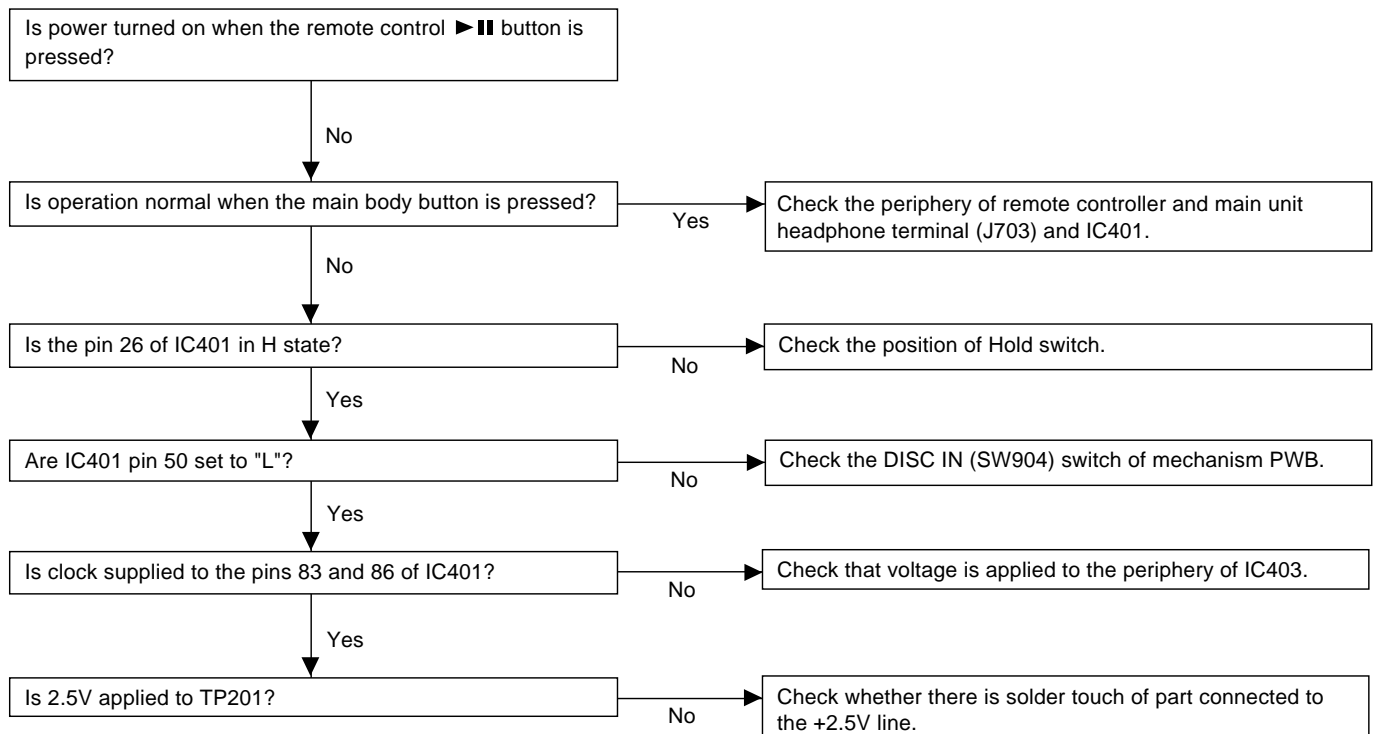
Turn the power off.

Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.

Do not touch the lens with the bare hand.

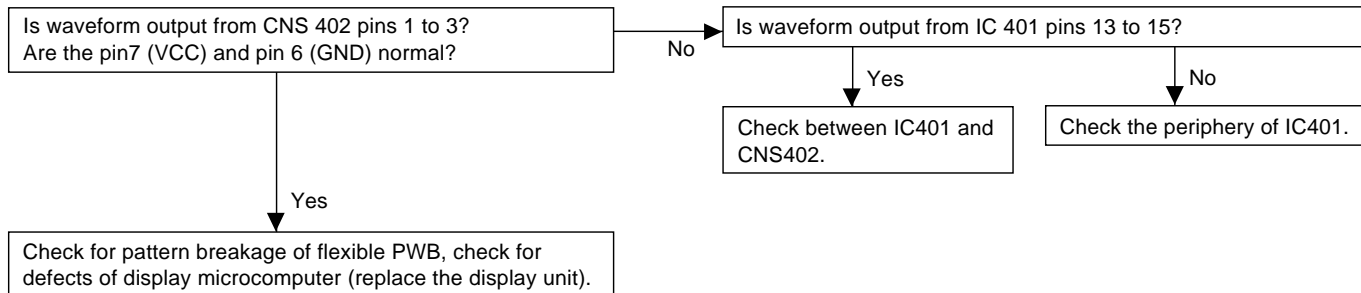


• Power is not turned on when the ► / ►|| button is pressed.

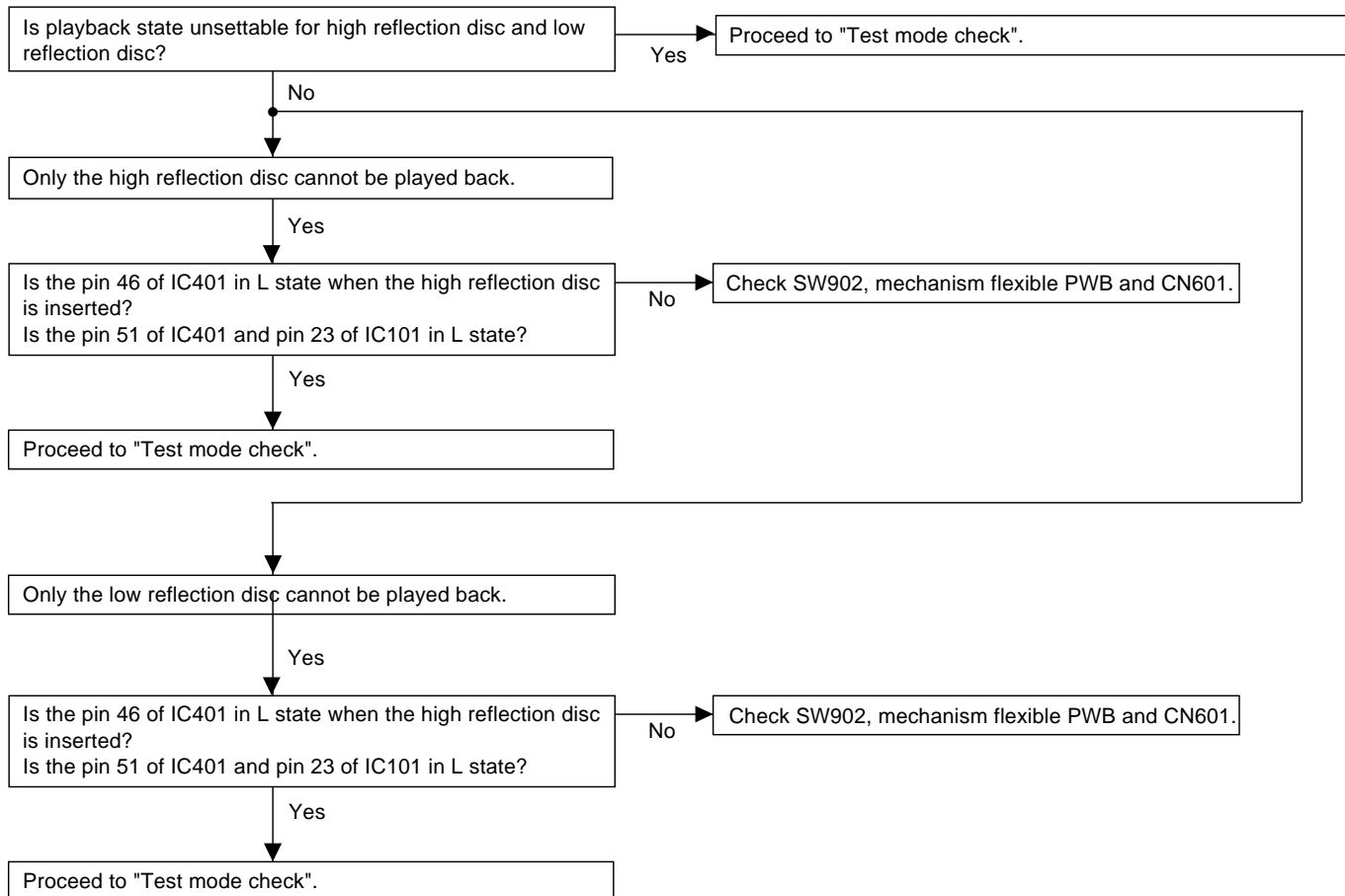


MD-MS200W/MD-MS200/MD-MS200H

• Abnormal display

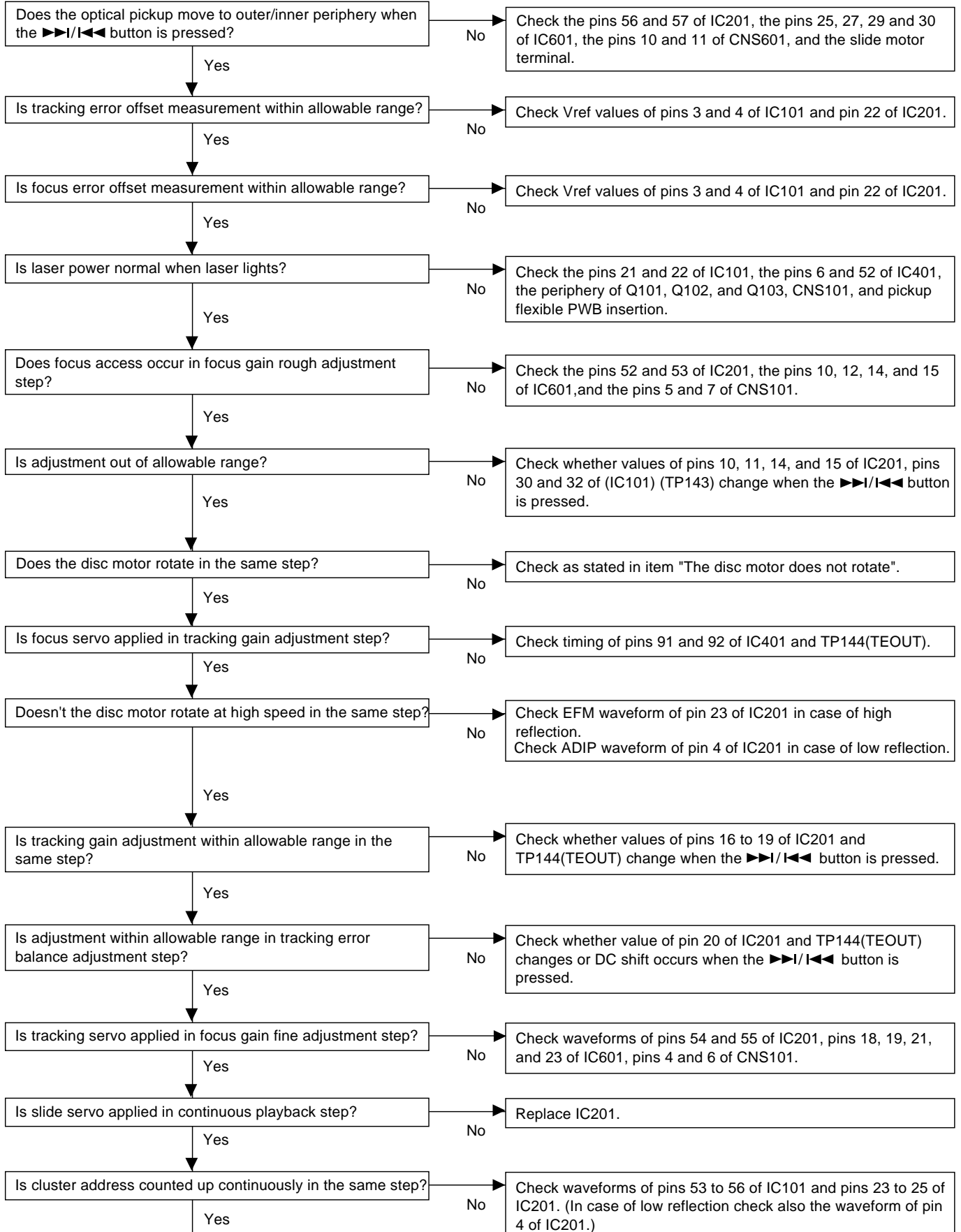


• Playback state cannot be set



• Test mode check

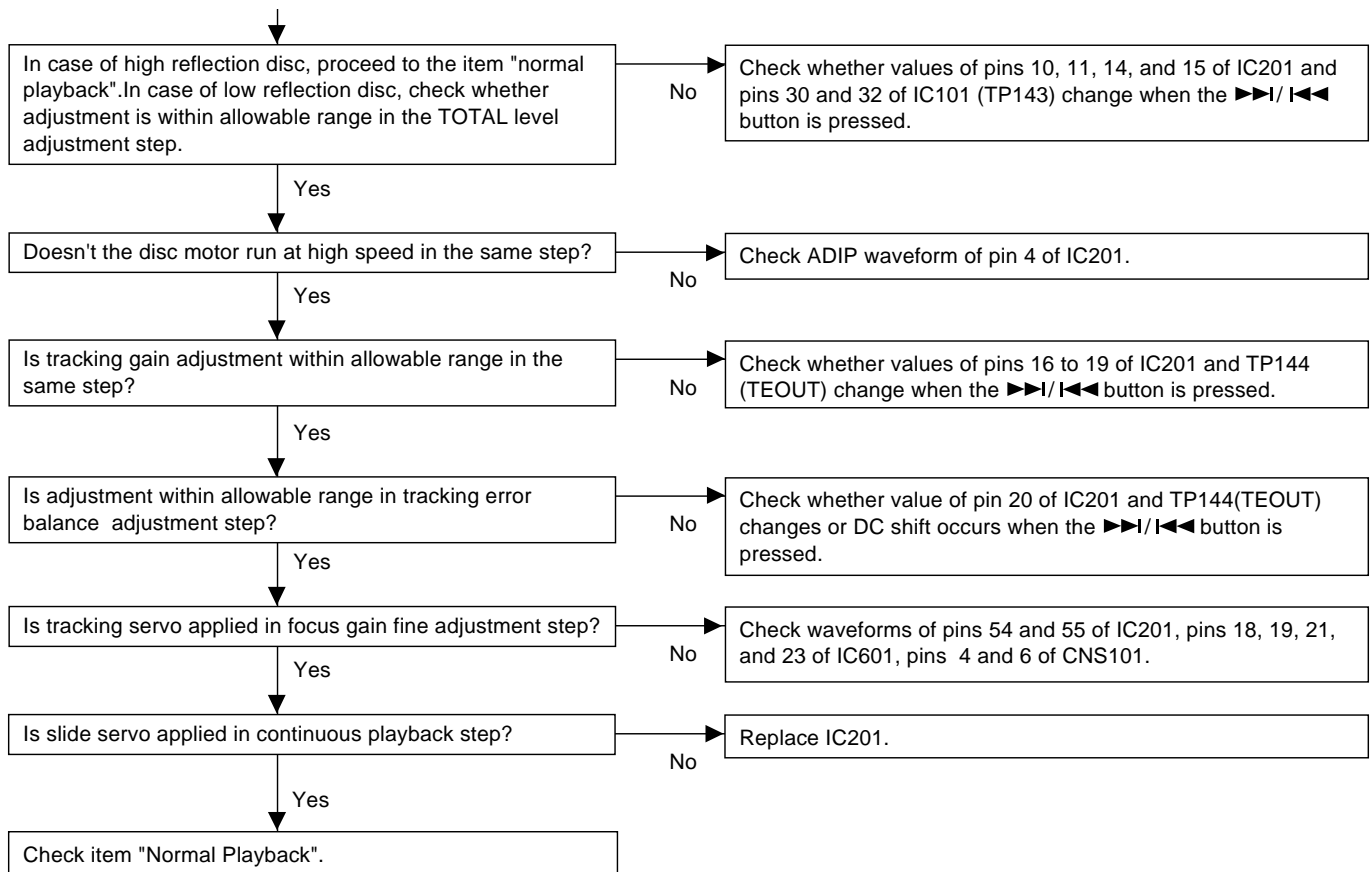
Insert a high reflection (low reflection) disc, and once perform automatic adjustment in AUTO mode, and then check in MANUAL mode. Simultaneously observe waveforms of EFM(TP145), FEOUT(TP143), and TEOUT(TP144).



Continued on the next page.

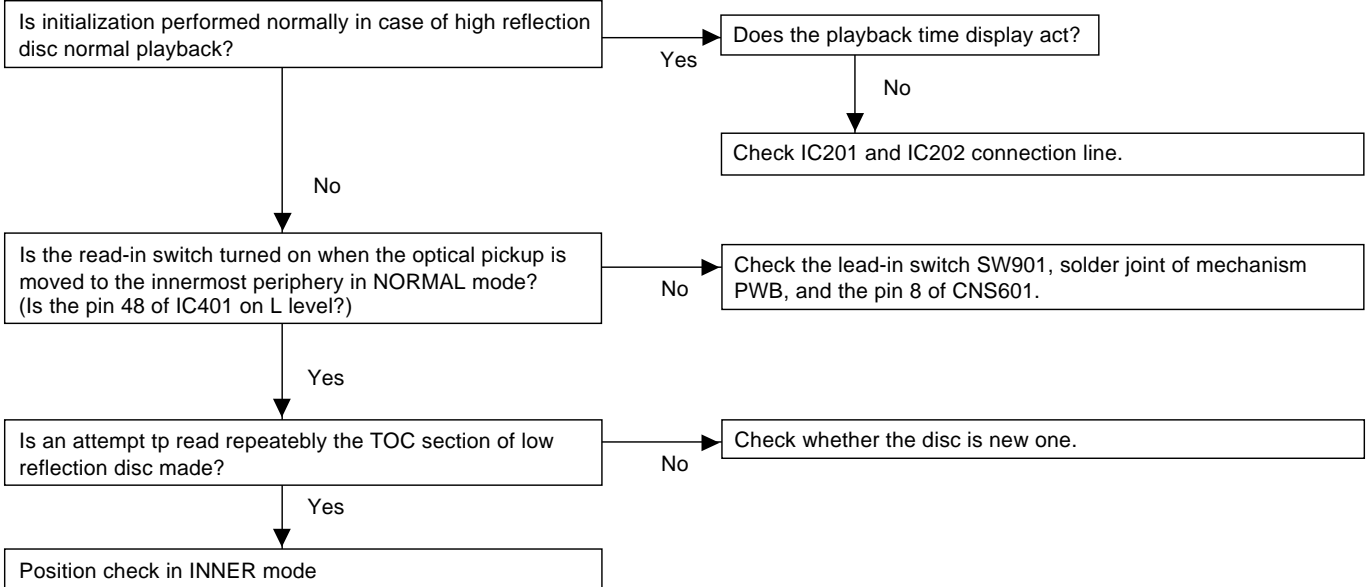
MD-MS200W/MD-MS200/MD-MS200H

Continued from the preceding page



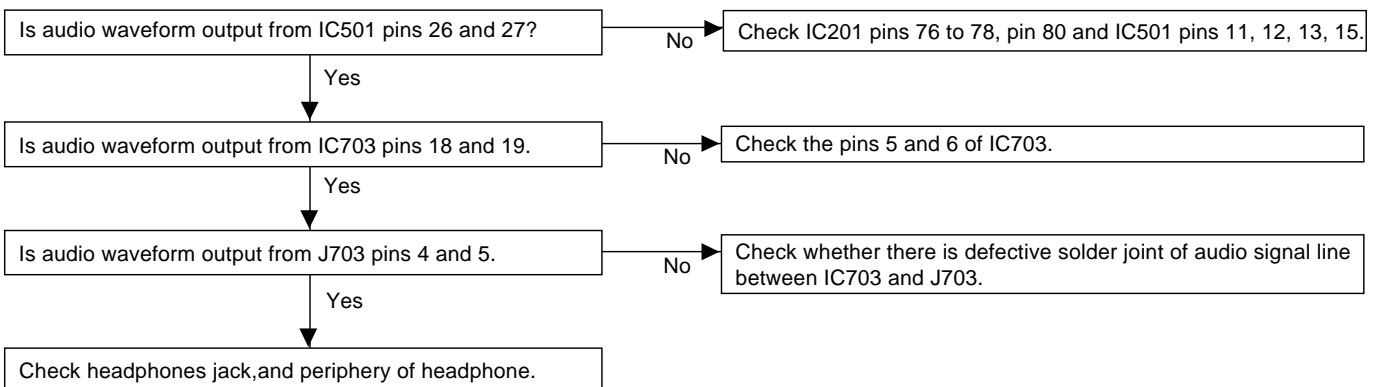
• Normal playback

When the address up to the sector address has been proved to be normal in the test mode.

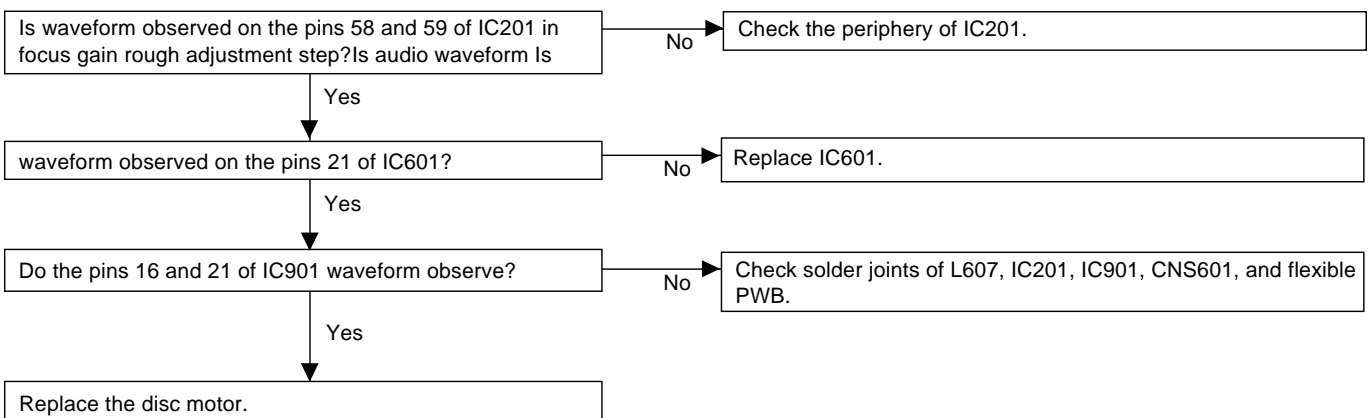


• Audio playback circuit

Although the playback time display is acting, no sound is given during playback in the normal mode.



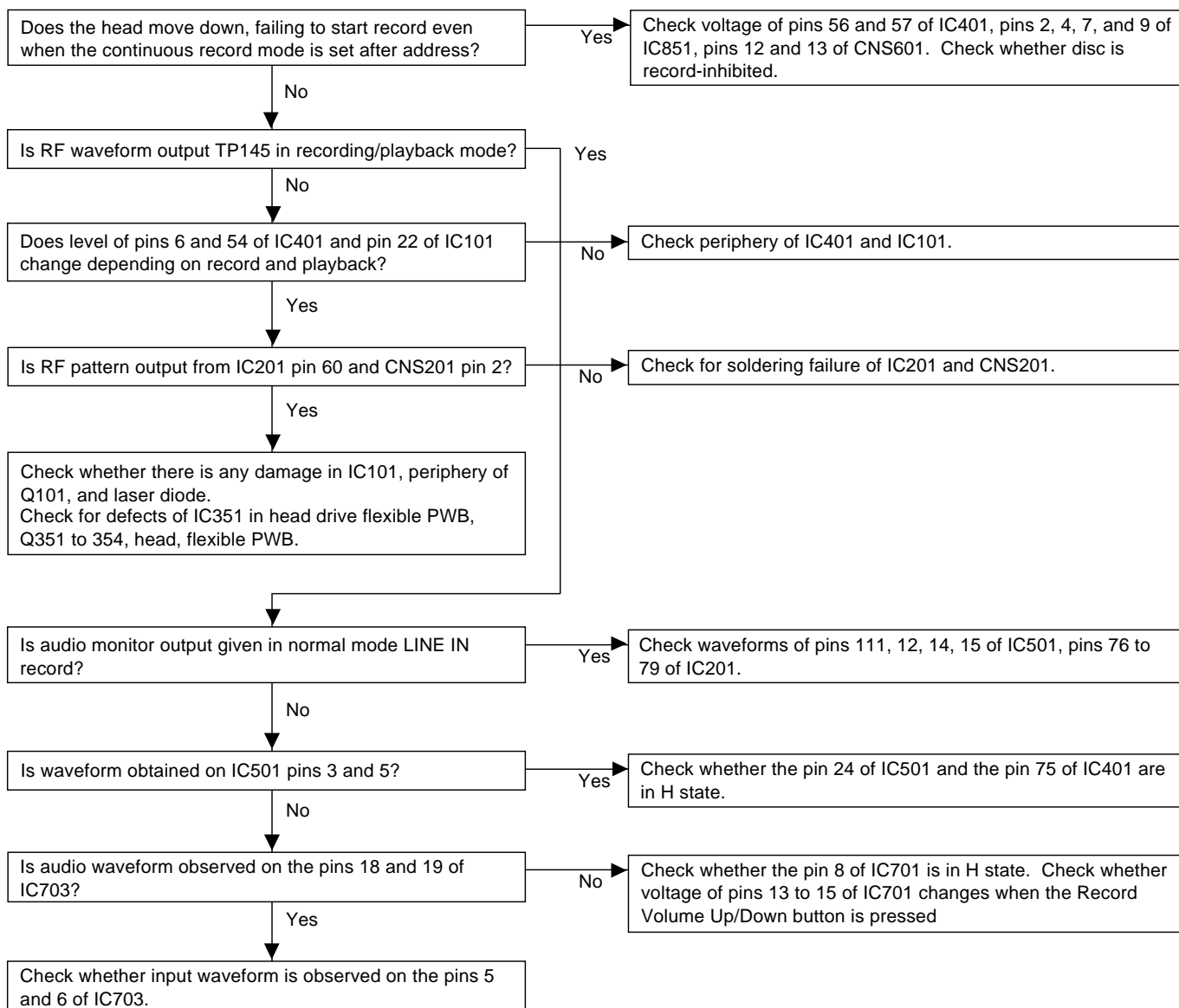
• The disc motor fails to rotate.



MD-MS200W/MD-MS200/MD-MS200H

• Recording/playback operation

Insert a low reflection disc, and ascertain audio output by normal playback, and then set TEST REC mode.



FUNCTION TABLE OF IC

IC401 RH-iX2596AF02(IX2596AF):System Microcomputer (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	ANI4	KEY1	Input	Main unit key input detection input 1
2	ANI5	KEY2	Input	Main unit key input detection input 2
3	ANI6	TEMP	Input	Temperature detection input
4	ANI7	TCG	Input	TOTAL signal level detection input
5	AVSS	AVSS	Input	A/D converter ground potential
6	ANO0	LDVAR	Output	Laser power set output
7	ANO1	MDOUT	Output	Internal operation monitor output
8	AVREF1	AVREF1	Input	D/A converter reference voltage input
9	P70	EPCS	Output	EEPROM chip selection output
10	P71	EEPD	In/Output	EEPROM serial data input/output
11	P72	EEPK	Output	EEPROM serial clock output
12	VSS	VSS	Input	Ground potential
13	P20	DSPSTB	Output	Strobe output for main unit indication
14	SO1	DSPDAT	Output	Indication data output
15	SCK1	DSPSCK	In/Output	Serial clock input/output for indication
16	P23	DSPSEL	Output	Indication data selection output
17	P24	RTCCE	Output	Chip enable output for RTC
18	P25	RTCWR	Output	Read/write output for RTC
19	P26	RTCDT	In/Output	Serial data input/output for RTC
20	P27	RTCK	Output	Serial clock output for RTC
21*	P80	P80	Output	Not used
22	P81	RPLAY	Input	Remote control PLAY key input
23	P82	PLAY	Input	Main unit PLAY key input
24	P83	REC	Input	Main unit REC key input
25	P84	STOP	Input	Main unit STOP key input
26	P85	HOLD	Input	Main unit HOLD key input
27	P86	XRST	Output	LSI reset signal output
28	P87	PBGAIN	Output	Playback gain selection output
29-36	P40-47	SYSD0-SYSD7	Input/Output	LSI parallel data bus
37	P50	SYWRX	Output	LSI register write pulse signal output
38	P51	SYRDX	Output	LSI register read pulse signal output
39	P52	SYCS	Output	LSI register selection signal output
40	P53	SWPUP	Output	Output for pull-up (*Terminal pull-up)
41	P54	TEST0	Input	Tset Mode set input 0
42	P55	TEST1	Input	Tset Mode set input 0
43	VSS	VSS	Input	Ground potential
44	P56	P56	Output	Not used
45	P57	MODE1	Input	Operation mode setting input 1
46	P60	DISC ID	Input	Disc type detection switch input
47	P61	DISC PRO	Input	Record enable/disable detection switch input
48	P62	INNSW	Input	Innermost periphery position detection switch input
49	P63	EJECT	Input	Eject operation detection switch input
50	P64	DISC IN	Input	Disc insertion detection switch input
51	P65	DISC	Output	Tracking signal polarity selection output
52	P66	LDON	Output	Laser control output
53	P67	HFON	Output	Pickup high frequency superposition control output
54	P100	HDON	Output	Magnetic head current control output
55	T06	T06	Output	Serial clock output for remote control
56	P102	LDCNT1	Output	Magnetic head arm control output 1
57	P103	LDCNT2	Output	Magnetic head arm control output 2

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

MD-MS200W/MD-MS200/MD-MS200H

IC401 RH-iX2596AF02(IX2596AF):System Microcomputer (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
58	P30	INPCNT	Output	Internal power control output
59	P31	EXPCNT	Output	External power control output
60	P32	DPCNT1	Output	Mechanism driver power control output 1
61	P33	DPCNT2	Output	Mechanism driver power control output 2
62	P34	LDPCNT	Output	Power control output for laser
63	P35	RFCNT	Output	Power control output for RF circuit
64	BUZ	BEEP	Output	Beep output
65	P37	SPCNT1	Output	System power control output 1
66	P90	SPCNT2	Output	System power control output 2
67	P91	CLKSTP	Output	2 MHz clock control output
68	P92	MCPGIN	Input	Mic plug detection input
69	P93	INPGIN	Input	INPUT plug detection input
70	P94	INPGCK	Input	INPUT plug discrimination signal input
71	P95	OPTCNT	Output	Optical input circuit control output
72	P96	RCPCNT	Output	Record circuit power control output
73	P120	EMPHO	Output	Emphasis control output 0
74	P121	DAPON	Output	DA converter control output
75	P122	ADPON	Output	AD converter control output
76	P123	PBMUTE	Output	Playback audio IC control output
77	P124	PBAULT	Output	Data latch output for playback audio IC control
78	P125	RCAULT	Output	Data latch output for record audio IC control
79	P126	AUDATA	Output	Serial data output for audio IC control
80	P127	AUSCLK	Output	Serial clock output for audio IC control
81	IC	IC	Input	Internal connection
82*	X2	X2	Inout	Not used
83	X1	X1	Input	Main system clock input
84	VDD	VDD	Input	Positive power supply
85*	XT2	XT2	Input	Not used
86	XT1	XT1	Input	Sub-system clock input
87	RESET	RESET	Input	System reset input
88	T100	CIN	Input	Track cross signal input
89	T101	SPIN	Input	Spin motor rotational speed input
90	INTP2	DINT	Input	LSI interruption request signal
91	P03/INTP3	SENSE	Input	Servo status detection signal input
92	P04	FOK	Input	Focus OK signal input
93*,94*	P05,06	P05,06	Output	Not used
95	AVDD	AVDD	Input	A/D converter analog power
96	AVREF0	AVREF0	Input	A/D converter reference voltage input
97	ANI0	BATINN	Input	Built-in battery voltage detection input
98	ANI1	BATEXT	Input	External battery voltage detection input
99	ANI2	MODE0	Input	Destination setting voltage detection input
100	ANI3	RKEY	Input	Remote control key input detection input

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC406 VHiRTC4543B-1 (RTC4543B):Realtime Clock

Pin No.	Terminal Name	Input/Output	Function
1*-4*	NC	—	Be sure to use this terminal in OPEN state so as to get more stable connected inside, and is the low truth line drawing oscillation.
5	FOE	Input	When this terminal is on H level, frequency selected by the FSEL terminal is output from the FOUT terminal. When this terminal is on L level, the FOUT terminal is set to high-impedance.
6	WR	Input	DATA terminal input/output selection terminal H level: Data input (RTC write) L level: Data output (RTC read)
7	FSEL	Input	Frequency to be output from the FOUT terminal is selected. H level: 1 Hz L level: 32.768 kHz
8	CE	Input	Chip enable input terminal H level: Enable When this terminal is on L level, the DATA terminal is set to high-impedance state, and the CLK, DATA, and WR terminals are set to input reception disabled state. When this terminal is on L level, TM bit is cleared.
9	GND	—	To be connected to the negative (ground) side of power supply.
10	FOUT	Output	Frequency selected by the FSEL terminal is output. 1 Hz output is synchronized with internal 1 sec signal. This terminal is not affected by the CE terminal.
11	DATA	In/Output	Input/output terminal to be used for data writing and reading
12	CLK	Input	Serial clock input terminal. At the rise edge data is input in write mode but in read mode data is output.
13*	NC	—	Be sure to use this terminal in OPEN state so as to get more stable connected inside, and is the low truth line drawing oscillation.
14	VDD	—	To be connected to the positive side of power supply.
15*-18*	NC	—	Be sure to use this terminal in OPEN state so as to get more stable connected inside, and is the low truth line drawing oscillation.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

MD-MS200W/MD-MS200/MD-MS200H

— M E M O —

SHARP PARTS GUIDE

MODEL **MD-MS200W**
MD-MS200
MD-MS200H

“HOW TO ORDER REPLACEMENT PARTS”

To have your order filled promptly and correctly, please furnish the following information.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. No. |
| 3. PART NO. | 4. DESCRIPTION |

★ MARK: SPARE PARTS-DELIVERY SECTION

For U.S.A. only

Contact your nearest SHARP Parts Distributor to order.

For location of SHARP Parts Distributor,
Please call Toll-Free;
1-800-BE-SHARP

Explanation of capacitors/resistors parts codes

Capacitors

VCC Ceramic type
 VCK Ceramic type
 VCT Semiconductor type
 VC •• MF Cylindrical type (without lead wire)
 VC •• MN Cylindrical type (without lead wire)
 VC •• TV Square type (without lead wire)
 VC •• TQ Square type (without lead wire)
 VC •• CY Square type (without lead wire)
 VC •• CZ Square type (without lead wire)
 VC J .. The 13th character represents capacity difference.
 ("J" $\pm 5\%$, "K" $\pm 10\%$, "M" $\pm 20\%$, "N" $\pm 30\%$,
 "C" ± 0.25 pF, "D" ± 0.5 pF, "Z" $+80-20\%$.)


If there are no indications for the electrolytic capacitors, error is $\pm 20\%$.

Resistors

VRD Carbon-film type
 VRS Carbon-film type
 VRN Metal-film type
 VR •• MF Cylindrical type (without lead wire)
 VR •• MN Cylindrical type (without lead wire)
 VR •• TV Square type (without lead wire)
 VR •• TQ Square type (without lead wire)
 VR •• CY Square type (without lead wire)
 VR •• CZ Square type (without lead wire)
 VR J .. The 13th character represents error.
 ("J" $\pm 5\%$, "F" $\pm 1\%$, "D" $\pm 0.5\%$.)

If there are no indications for other parts, the resistors are $\pm 5\%$ carbon-film type.

NOTE:

Parts marked with “” are important for maintaining the safety of the set.
 Be sure to replace parts with specified ones for maintaining the safety and performance of the set.

MD-MS200W/MD-MS200/MD-MS200H

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
INTEGRATED CIRCUITS				
IC101	VHIIR3R50//1	J	AV	RF Signal Processor,IR3R50
IC201	VHILR37646/-1	J	BF	ENDEC,LR37646
IC202	RH-IX2567AFZZ	J	BA	4bit D-RAM,IX2567AF
IC351	VHI74ACT02F-1	J	AF	Head Driver,74ACT02F
IC401	RH-IX2596AF02	J	AX	System Microcomputer, IX2596AF
IC402	VHIS29294A/-1	J	AH	E ² -PROM,S29294A
IC403	VHITC7W14FU-1	J	AF	Inverter,TC7W14FU
IC404	VHI7SH00FU/-1	J	AE	NAND Gate,7SH00FU
IC405	VHI61AC2102-1	J	AE	Reset,61AC2102
IC406	VHIRT04543B-1	J	AM	Realtime Clock,RTC4543B
IC501	VHIAK4520VF-1	J	AV	AD/DA Converter,AK4520VF
IC601	VHIBH6512FS-1	J	AR	Motor Driver,BH6512FS
IC701	VHIIIR3R54N/-1	J	AQ	Audio Amp.,IR3R54N
IC702	VHITK71350M-1	J	AF	Power Drive,
IC703	VHIIIR3R54N/-1	J	AQ	Audio Amp.,IR3R54N
IC800	VHVICPS18//1	J	AE	Varistor/Surge Absorber,CPS18
IC801	VHIHAT1025R-1	J	AK	Power Select,HAT1025R
IC802	VHITC7S00FU-1	J	AD	Charge Drive,TC7S00FU
IC803	VHVICPS05//1	J	AF	Varistor/Sarge Absorber,CPS05
IC804	VHVICPS07//1	J	AF	Varistor/Sarge Absorber,CPS07
IC805	VHI62FP2802-1	J	AF	Voltage Regulator,62FP2802
IC806	VHI62FP3302-1	J	AE	Voltage Regulator,62FP3302
IC821	VHIIIR3M09N/-1	J	AL	Power Drive,IR3M09N
IC822	VHILMS6702/-1	J	AG	Power Drive,LM6702
IC841	VHIIIR3M09N/-1	J	AL	Power Drive,IR3M09N
IC851	VHILB1638M/-1	J	AH	Motor Drive,LB1638M
IC861	VHI62FP2802-1	J	AF	Voltage Regulator,62FP2802
IC901	VHISN761031-1	J	AP	3-Phase Brushleess Motor Driver,SN761031
IC902	VHIHN1C01FU-1	J	AD	Dua Power Transistor, HN1C01FU

TRANSISTORS

Q101	VS2SA1314C/-1	J	AD	Silicon,PNP,2SA1314 C
Q102	VSDTA114TE/-1	J	AB	Digital,PNP,DTA114 TE
Q103	VSDTC144TE/-1	J	AC	Digital,NPN,DTC144 TE
Q171	VS2SA1745//1	J	AC	Silicon,PNP,2SA1745
Q351	VS2SK2909//1	J	AE	FET,2SK2909
Q352	VS2SK2911//1	J	AE	FET,2SK2911
Q353	VS2SK2909//1	J	AE	FET,2SK2909
Q354	VS2SK2911//1	J	AE	FET,2SK2911
Q711	VSDTC323TK/-1	J	AB	Digital,NPN,DTC323 TK
Q721	VS2SC4213B/-1	J	AC	Silicon,NPN,2SC4213 B
Q801	VS2SC2982C/-1	J	AC	Silicon,NPN,2SC2982 C
Q802,803	VSDTC144EE/-1	J	AB	Digital,NPN,DTC144 EE
Q804	VS2SA1745//1	J	AC	Silicon,PNP,2SA1745
Q841	VHILML2402/-1	J	AF	Power Drive,LML2402

DIODES

D351,352	VHDSB0209CP-1	J	AC	Silicon,SB0209CP
D401	VHDDA221//1	J	AB	Silicon,DA221
D402	VHDDAN222//1	J	AA	Silicon,DAN222
D471	VHDSB00703Q-1	J	AB	Silicon,SB00703Q
D491	VHE015Z5R1Y-1	J	AD	Zener,5.1V,015Z5.1Y
D801	VHE15AZ7R5Y-1	J	AC	Zener,7.5V,15AZ7.5Y
D802	VHDSB10015C-1	J	AD	Silicon,SB10015C
D803	VHDDAN222//1	J	AA	Silicon,DAN222
D821	VHDSB10015C-1	J	AD	Silicon,SB10015C
D841	VHDSB10015C-1	J	AD	Silicon,SB10015C
D842	VHD1SS373//1	J	AD	Silicon,1SS373
D861,862	VHDSB10015C-1	J	AD	Silicon,SB10015C

COILS

L100	RCILC0230AFZZ	J	AC	Choke,0.47 μH
L201,202	RCILC0230AFZZ	J	AC	Choke,0.47 μH
L491	RCILC0230AFZZ	J	AC	Choke,0.47 μH
L500	VPANM4R7J0000	J	AC	4.7 μH
L600	RCILR0559AFZZ	J	AC	47 μH
L601,602	RCILC0246AFZZ	J	AC	100 μH,Choke
L603,604	RCILR0559AFZZ	J	AC	47 μH
L605,606	RCILC0246AFZZ	J	AC	100 μH,Choke
L607	RCILR0559AFZZ	J	AC	47 μH
L612	RCILC0230AFZZ	J	AC	Choke,0.47 μH
L721	RCILC0230AFZZ	J	AC	Choke,0.47 μH
L751,752	RCILR0559AFZZ	J	AC	47 μH
L800	RCORF0112AFZZ	J	AC	Ceramic Core

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
L801	RCILC0330AFZZ	J	AC	1 μH,Choke
L821,822	RCILC0332AFZZ	J	AC	4.7 μH,Choke
L841	RCILC0332AFZZ	J	AC	4.7 μH,Choke
L842	RCILC0333AFZZ	J	AC	10 μH,Choke
L861,862	RCILR0559AFZZ	J	AC	47 μH
L863	RCILC0332AFZZ	J	AC	4.7 μH,Choke
L881,882	RCILC0230AFZZ	J	AC	Choke,0.47 μH

VIBRATOR

XL201	RCRSC0010AFZZ	J	AK	Crystal,33.868MHz
-------	---------------	---	----	-------------------

CAPACITORS

C100,101	VCKYTV0JB105K	J	AD	1 μF,6.3V
C102	VCKYTV1CB224K	J	AB	0.22 μF,16V
C103	VCKYTV1CB474K	J	AC	0.47 μF,16V
C104	VCCCCY1HH3R0C	J	AA	3 pF (CH),50V
C105	VCKYCY1HB222K	J	AA	0.0022 μF,50V
C106,107	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C108,109	VCCCCY1HH8R0D	J	AA	8 pF (CH),50V
C111,112	VCKYTV0JB105K	J	AD	1 μF,6.3V
C114	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C115	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C116	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C118	VCKYCY1HB331K	J	AA	330 pF,50V
C119	VCKYCY1HB332K	J	AA	0.0033 μF,50V
C120	VCKYCY1HB331K	J	AA	330 pF,50V
C121,122	VCKYTV0JB105K	J	AD	1 μF,6.3V
C123,124	VCKYCY1EB223K	J	AB	0.022 μF,25V
C125,126	VCKYCY1HB682K	J	AA	0.0068 μF,50V
C127	VCKYTV1CB104K	J	AA	0.1 μF,16V
C128	VCKYTV0JB105K	J	AD	1 μF,6.3V
C129	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C130,131	VCKYTV0JB105K	J	AD	1 μF,6.3V
C132	VCCCCY1HH6R0C	J	AA	6 pF (CH),50V
C133	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C150	VCCCCY1HH2R0C	J	AA	2 pF (CH),50V
C160	VCCSCY1HL391J	J	AA	390 pF,50V
C161	VCKYTQ1CB105K	J	AD	1 μF,16V
C162	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C163	VCKYTV0JB105K	J	AD	1 μF,6.3V
C164	VCKYCY1CB473K	J	AA	0.047 μF,16V
C165	VCKYCY1CB333K	J	AA	0.033 μF,16V
C171	VCKYTV0JB105K	J	AD	1 μF,6.3V
C201	VCKYTV1CF105Z	J	AB	1 μF,16V
C202	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C203,204	VCKYCY1EF104Z	J	AA	0.1 μF,25V
C205	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C206	VCKYTV1CB184K	J	AC	0.18 μF,16V
C207	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C211,212	VCCCCY1HH5R0C	J	AA	5 pF (CH),50V
C351	VCCCCY1HH151J	J	AA	150 pF (CH),50V
C353	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C354	VCKYTQ1EB104K	J	AC	0.1 μF,25V
C357	VCKYCY1CF104Z	J	AB	0.1 μF,16V
C361	VCKYTV1HB393K	J	AB	0.039 μF,50V
C401	VCKYCY1CB473K	J	AA	0.047 μF,16V
C404	VCKYTV1CF105Z	J	AB	1 μF,16V
C405	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C406	VCKYCY1HB681K	J	AA	680 pF,50V
C407	VCKYTV1CF105Z	J	AB	1 μF,16V
C408	VCKYCY1EB103K	J	AA	0.01 μF,25V
C461	VCKYCY1EF104Z	J	AA	0.1 μF,25V
C471	VCKYTV1CF105Z	J	AB	1 μF,16V
C491	VCKYCY1EF104Z	J	AA	0.1 μF,25V
C500	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C501,502	VCKYCY1HB471K	J	AA	470 pF,50V
C503,504	VCSAFA1AJ335M	J	AD	3.3 μF,10V
C505	VCKYTV1CB104K	J	AA	0.1 μF,16V
C507	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C508~510	VCKYTV0JB105K	J	AD	1 μF,6.3V
C511	VCKYTQ1CB105K	J	AD	1 μF,16V
C600	RC-KZ1170AFZZ	J	AF	3.3 μF,6.3V
C601~607	VCKYTV1CF105Z	J	AB	1 μF,16V
C612	VCKYTV1CB104K	J	AA	0.1 μF,16V
C613~615	VCKYCY1EB103K	J	AA	0.01 μF,25V
C701,702	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum
C703	VCKYCY1EB103K	J	AA	0.01 μF,25V
C711,712	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C713,714	VCKYTV0JB105K	J	AD	1 μF,6.3V
C715	VCKYCY1EF104Z	J	AA	0.1 μF,25V

MD-MS200W/MD-MS200/MD-MS200H

NO.	PART CODE	★	PRICE RANK	DESCRIPTION	NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C721,722	VCSAFA1AJ335M	J	AD	3.3 μF,10V	R131	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C723,724	VCKYCY1HB102K	J	AA	1000 pF,50V	R132	VRS-CY1JB393J	J	AA	39 kohms,1/16W
C725,726	VCSAFA1AJ335M	J	AD	3.3 μF,10V	R133	VRS-CY1JB154J	J	AA	150 kohms,1/16W
C727	VCKYTV1CF105Z	J	AB	1 μF,16V	R134	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C728	VCKYCY1EF104Z	J	AA	0.1 μF,25V	R136	VRS-CY1JB124J	J	AA	120 kohms,1/16W
C729	RC-KZ1168AFZZ	J	AC	1 μF,10V,Electrolytic	R137	VRS-CY1JB223J	J	AA	22 kohms,1/16W
C730	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum	R138	VRS-CY1JB683J	J	AA	68 kohms,1/16W
C731	VCKYCY1CF224Z	J	AB	0.22 μF,16V	R139,140	VRS-CY1JB473J	J	AA	47 kohms,1/16W
C733,734	VCKYTV1CB104K	J	AA	0.1 μF,16V	R141	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
C751,752	VCKYCY1EB153K	J	AA	0.015 μF,25V	R142	VRS-CY1JB153J	J	AA	15 kohms,1/16W
C753,754	VCKYTV1CF105Z	J	AB	1 μF,16V	R143	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C755	VCKYCY1EB103K	J	AA	0.01 μF,25V	R144	VRS-CY1JB221J	J	AA	220 ohms,1/16W
C756,757	VCKYTV1CF105Z	J	AB	1 μF,16V	R145	VRS-CY1JB335J	J	AA	3.3 Mohms,1/16W
C758	VCSAFA1AJ335M	J	AD	3.3 μF,10V	R151	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C759	VCKRCY1CS563K	J	AB	0.056 μF,16V	R154	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
C761,762	VCKYTV0JB105K	J	AD	1 μF,6.3V	R160	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C802	VCKYTV1CF105Z	J	AB	1 μF,16V	R161	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
C803	VCKYTV1CB104K	J	AA	0.1 μF,16V	R171	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C804	VCKYTV1CF105Z	J	AB	1 μF,16V	R204	VRS-CY1JB102J	J	AA	1 kohm,1/16W
C805	VCEAPS107AF0J	J	AC	100 μF,6.3V,Electrolytic	R222	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
C806	RC-KZ1170AFZZ	J	AF	3.3 μF,6.3V	R361	VRS-TQ2BB8R2J	J	AB	8.2 ohms,1/8W
C807	VCKYTV1CB104K	J	AA	0.1 μF,16V	R401	VRS-CY1JB334J	J	AA	330 kohms,1/16W
C808	VCKYTV1CB184K	J	AC	0.18 μF,16V	R402	VRS-CY1JB102J	J	AA	1 kohm,1/16W
C809	VCSAFA0JJ106M	J	AD	10 μF,6.3V,Electrolytic,Tantalum	R403	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
C810,811	VCKYTV1CB334K	J	AC	0.33 μF,16V	R404~406	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C812	VCKYTV1CB184K	J	AC	0.18 μF,16V	R411	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C813	VCKYTV1CF105Z	J	AB	1 μF,16V	R412	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C822	VCCCCY1HH2R0C	J	AA	2 pF (CH),50V	R413~415	VRS-CY1JB102J	J	AA	1 kohm,1/16W
C823,824	VCCCCY1HH101J	J	AA	100 pF (CH),50V	R416	VRS-CY1JB123J	J	AA	12 kohms,1/16W
C825	VCCCCY1HH5R0C	J	AA	5 pF (CH),50V	R417	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C826	RC-KZ1170AFZZ	J	AF	3.3 μF,6.3V	R418	VRS-CY1JB393J	J	AA	39 kohms,1/16W
C827	VCEAPS227AF0G	J	AC	220 μF,4V,Electrolytic	R421	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C828	VCKYTV0JB105K	J	AD	1 μF,6.3V	R422	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C842	VCCCCY1HH270J	J	AA	27 pF (CH),50V	R423	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C843,844	VCCCCY1HH101J	J	AA	100 pF (CH),50V	R424	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C845	VCCCCY1HH120J	J	AA	12 pF (CH),50V	R425,426	VRS-CY1JB223J	J	AA	22 kohms,1/16W
C846	VCKYTQ1CB105K	J	AD	1 μF,16V	R428	VRS-CY1JB153J	J	AA	15 kohms,1/16W
C847	RC-KZ1170AFZZ	J	AF	3.3 μF,6.3V	R429	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C848	VCKYTV0JB105K	J	AD	1 μF,6.3V	R433,434	VRS-CY1JB104J	J	AA	100 kohm,1/16W
C849	VCKYCY1EB103K	J	AA	0.01 μF,25V	R435,436	VRS-CY1JB333J	J	AA	33 kohms,1/16W
C850	VCKYCY1HB102K	J	AA	1000 pF,50V	R437,438	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C861	VCKYTV1CF105Z	J	AB	1 μF,16V	R441~444	VRS-CY1JB102J	J	AA	1 kohm,1/16W
C862	VCKYTV1CB184K	J	AC	0.18 μF,16V	R445,446	VRS-CY1JB103J	J	AA	10 kohm,1/16W
C863	VCKYTQ1CB105K	J	AD	1 μF,16V	R447	VRS-CY1JB223J	J	AA	22 kohms,1/16W
C865,866	VCKYTQ1CB105K	J	AD	1 μF,16V	R448	VRS-CY1JB154J	J	AA	150 kohms,1/16W [MD-MS200]
C867	VCEAPS227AF0G	J	AC	220 μF,4V,Electrolytic	R448	VRS-CY1JB393J	J	AA	39 kohms,1/16W [MD-MS200W]
C868	VCKYTV1CF105Z	J	AB	1 μF,16V	R448	VRS-CY1JB683J	J	AA	68 kohms,1/16W [MD-MS200H]
C869	VCEAPS227AF0G	J	AC	220 μF,4V,Electrolytic	R449	VRS-CY1JB223D	J	AA	22 kohms,1/16W
C881	VCKYTV1CB104K	J	AA	0.1 μF,16V	R451	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
C882	VCKYTV1CF105Z	J	AB	1 μF,16V	R452	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
C902	VCKYCY1EB223K	J	AB	0.022 μF,25V	R453	VRS-CY1JB183J	J	AA	18 kohms,1/16W
C903	VCKYCY1CB473K	J	AA	0.047 μF,16V	R454	VRS-CY1JB563J	J	AA	56 kohms,1/16W
C904	VCKYCY1EB223K	J	AB	0.022 μF,25V	R455	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
C905~907	VCKYCY1HB332K	J	AA	0.0033 μF,50V	R456	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
C908,909	VCKYTV1CB104K	J	AA	0.1 μF,16V	R457	VRS-CY1JB183J	J	AA	18 kohms,1/16W
C910	VCKYTV1CF105Z	J	AB	1 μF,16V	R458	VRS-CY1JB563J	J	AA	56 kohms,1/16W
C911	VCKYCY1CF104Z	J	AB	0.1 μF,16V	R461	VRS-CY1JB363D	J	AA	36 kohms,1/16W
					R462	VRS-CY1JB183D	J	AA	18 kohms,1/16W
					R471	VRS-CY1JB471J	J	AA	470 ohms,1/16W
					R472	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
					R473	VRS-CY1JB123J	J	AA	12 kohms,1/16W
					R474	VRS-CY1JB473J	J	AA	47 kohms,1/16W
					R500	VRS-CY1JB4R7J	J	AA	4.7 ohms,1/16W
					R501,502	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
					R601	VRS-CY1JB103J	J	AA	10 kohm,1/16W
					R701,702	VRS-CY1JB101J	J	AA	100 ohm,1/16W
					R703	VRS-CY1JB154J	J	AA	150 kohms,1/16W
					R711,712	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
					R713,714	VRS-CY1JB103J	J	AA	10 kohm,1/16W
					R715,716	VRS-CY1JB104J	J	AA	100 kohm,1/16W
					R717	VRS-CY1JB102J	J	AA	1 kohm,1/16W
					R719,720	VRS-CY1JB103J	J	AA	10 kohm,1/16W
					R723,724	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
					R725	VRS-CY1JB101J	J	AA	100 ohm,1/16W
					R726	VRS-CY1JB393J	J	AA	39 kohms,1/16W
					R727	VRS-CY1JB103J	J	AA	10 kohm,1/16W
					R728	VRS-CY1JB102J	J	AA	1 kohm,1/16W
					R751,752	VRS-CY1JB820J	J	AA	82 ohms,1/16W
					R753	VRS-CY1JB154J	J	AA	150 kohms,1/16W
					R754	VRS-CY1JB334J	J	AA	330 kohms,1/16W
					R756,757	VRS-CY1JB273J	J	AA	27 kohms,1/16W
					R761,762	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
RESISTORS									
	VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8x1.55mm, Green					
R101	VRS-CY1JB104J	J	AA	100 kohm,1/16W					
R102	VRS-CY1JB123J	J	AA	12 kohms,1/16W					
R104	VRS-CY1JB392J	J	AA	3.9 kohms,1/16W					
R105	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W					
R106	VRS-CY1JB123J	J	AA	12 kohms,1/16W					
R107	VRS-CY1JB124D	J	AA	120 kohms,1/16W					
R109	VRS-CY1JB273D	J	AA	27 kohms,1/16W					
R111	VRS-CY1JB273D	J	AA	27 kohms,1/16W					
R112	VRS-CY1JB124D	J	AA	120 kohms,1/16W					
R113	VRS-CY1JB123J	J	AA	12 kohms,1/16W					
R116	VRS-CY1JB183J	J	AA	18 kohms,1/16W					
R117	VRS-CY1JB224D	J	AA	220 kohms,1/16W					
R119,120	VRS-CY1JB473D	J	AA	47 kohms,1/16W					
R121	VRS-CY1JB224D	J	AA	220 kohms,1/16W					
R122	VRS-CY1JB183J	J	AA	18 kohms,1/16W					
R124,125	VRS-CY1JB184J	J	AA	180 kohms,1/16W					
R126	VRS-CY1JB471J	J	AA	470 ohms,1/16W					
R127	VRS-CY1JB391J	J	AA	390 ohms,1/16W					
R128,129	VRS-CY1JB102J	J	AA	1 kohm,1/16W					
R130	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W					

MD-MS200W/MD-MS200/MD-MS200H

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R765,766	VRS-CY1JB180J	J	AA	18 ohms,1/16W
R801	VRS-CY1JB684D	J	AA	680 kohms,1/16W
R802	VRS-CY1JB394D	J	AA	390 kohms,1/16W
R803,804	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R805	VRS-CY1JB474D	J	AA	470 kohms,1/16W
R806	VRS-CY1JB684D	J	AA	680 kohms,1/16W
R810	VRS-CY1JB204D	J	AA	200 kohms,1/16W
R811	VRS-CY1JB184D	J	AA	180 kohms,1/16W
R812	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R821	VRS-CY1JB474J	J	AA	470 kohms,1/16W
R822	VRS-CY1JB684J	J	AA	680 kohms,1/16W
R823	VRS-CY1JB335J	J	AA	3.3 Mohms,1/16W
R824	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R826	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R827	VRS-CY1JB474D	J	AA	470 kohms,1/16W
R828	VRS-CY1JB334D	J	AA	330 kohms,1/16W
R829	VRS-CY1JB474J	J	AA	470 kohms,1/16W
R830	VRS-CY1JB220J	J	AA	22 ohms,1/16W
R841	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R843	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R844	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R846	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R847	VRS-CY1JB394D	J	AA	390 kohms,1/16W
R848	VRS-CY1JB274D	J	AA	270 kohms,1/16W
R849	VRS-CY1JB303J	J	AA	30 kohms,1/16W
R851	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R901	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R902	VRS-CY1JB331J	J	AA	330 ohms,1/16W
R903,904	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R905	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R906,907	VRS-CY1JB154J	J	AA	150 kohms,1/16W

OTHER CIRCUITRY PARTS

CNS101	QCNCWXX26AFZZ	J	AF	Socket,26Pin
CNS201	QCNCW764FAFZZ	J	AD	Socket,6Pin
CNS351	QCNCW764FAFZZ	J	AD	Socket,6Pin
CNS401	QCNCW749PAFZZ	J	AE	Socket,14Pin
CNS402	QCNCW764GAFZZ	J	AD	Socket,7Pin
CNS601	QCNCW764NAFZZ	J	AE	Socket,13Pin
J701	QJAKZ0254AFZZ	J	AR	Jack,OPTICAL/LIVE IN
J702	QJAKM0189AFZZ	J	AE	Jack,MIC IN
J703	QJAKM0200AFZZ	J	AF	Jack,Headphones
J801	QJAKC0123AFZZ	J	AE	Jack,DC IN
M1	RMOTV0480AFZZ	J	AS	Motor Ass'y [Spin]
M902	RMOTV0473AFM1	J	AS	Motor Ass'y [Feed]
M903	RMOTV0474AFM1	J	AS	Motor Ass'y [Lift]
SW401	QSW-M0158AFZZ	J	AD	Switch,Push Type [Disc Cover Open/Close Detection]
SW402	QSW-S0910AFZZ	J	AD	Switch,Push Type [Hold]
SW901	QSW-M0158AFZZ	J	AD	Switch,Push Type [Lead In]
SW902	QSW-M0160AFZZ	J	AE	Switch,Push Type [Disc Media]
SW903	QSW-M0161AFZZ	J	AE	Switch,Push Type [Disc Program]
SW904	QSW-M0160AFZZ	J	AE	Switch,Push Type [Disc Media]

MECHANICAL PARTS

1	LANGF1552AFM1	J	AG	Screw Drive Ass'y
2	LANGF1575AFZZ	J	AD	Spacer,Motor
3	RCTRH8158AF10	J	BR	Optical Pickup Unit [MD-MS200W/H]
3	RCTRH8158AF30	J		Optical Pickup Unit [MD-MS200]
4	MSPRP0726AFFJ	J	AA	Spring,Shaft
5	LCHSM0926AFM1	J	AK	Main Chassis Ass'y
6	QPWBH0286AFZZ	J	AG	Head Joint Flexible PWB
7	QPWBH0249AFZZ	J	AG	Mechanism Flexible PWB
8	LANGF1554AFZZ	J	AC	Bracket,Shaft Guide
9	NSFTM0270AFFW	J	AB	Shaft (S)
11	RCILH0107AFZZ	J		Magnetic Head
13	LHLDX3129AFM2	J	AK	Cartridge Holder Ass'y
14	MLEVF2591AFM1	J	AF	Lift Lever Ass'y
15	MSPRD1341AFFJ	J	AB	Spring,Lift Lever
16	NGERH0547AFZZ	J	AB	Rack,Grip
17	MSPRP0800AFFJ	J	AB	Spring,Grip
18	MLEVF2553AFFW	J	AD	Lever,Lift
19	LANGF1555AFZZ	J	AB	Bracket,Lift Lever
20	NSFTM0288AFFW	J	AC	Shaft,Pickup Slide
21	MLEVF2551AFFW	J	AD	Lever,Eject
22	MSPRT1572AFFJ	J	AB	Spring,Eject Lever
23	MSPRT1573AFFJ	J	AB	Spring,Cancel Lever

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
24	PCUSG0517AFZZ	J	AA	Cushion,Mechanism
30	LANGF1586AFFW	J	AD	Bracket,Head
31	LANGF1556AFFW	J	AD	Bracket,Pickup
32	MSPRD1351AFFJ	J	AB	Spring Head
33	LX-WZ9274AFZZ	J	AA	Washer,ø1.5×0.2mm
34	LX-BZ0900AFZZ	J	AB	Screw,Special
105	LX-BZ0800AFZZ	J	AA	Screw,ø1.4×2.5mm
106	LX-BZ0860AFZZ	J	AB	Screw,ø1.4×5.0mm
107	LX-BZ0825AFZZ	J	AA	Screw,ø1.4×1.5mm
108	LX-SZ0041AFZZ	J	AB	Screw,ø1.7×4.2mm
109	XWSSD14-05000	J	AA	Washer,ø1.4×0.5mm
110	XAPSN14P02200	J	AA	Screw,ø1.4×2.2mm
111	LX-BZ0804AFFF	J	AA	Screw,ø1.4×2.2mm
112	LX-BZ0907AFZZ	J	AB	Screw,ø1.4×3.5mm
114	LX-BZ0830AFZZ	J	AB	Screw,ø1.4×4.5mm
115	LX-BZ0946AFZZ	J	AB	Screw,ø1.4×2.0mm
116	LX-BZ0824AFZZ	J	AA	Screw,ø1.4×3mm
117	LX-BZ0928AFZZ	J	AB	Screw,ø2×4.5mm
118	PCUSG0625AFZZ	J		Cushion
119	PSHET0353AFZZ	J		Sheet,Head
M1	RMOTV0480AFZZ	J	AS	Motor Ass'y [Spin]
M902	RMOTV0473AFM1	J	AS	Motor Ass'y [Feed]
M903	RMOTV0474AFM1	J	AS	Motor Ass'y [Lift]
SW901	QSW-M0158AFZZ	J	AD	Switch,Push Type [Lead In]
SW902	QSW-M0160AFZZ	J	AE	Switch,Push Type [Disc Media]
SW903	QSW-M0161AFZZ	J	AE	Switch,Push Type [Disc Program]
SW904	QSW-M0160AFZZ	J	AE	Switch,Push Type [Disc Media]

CABINET PARTS

201	GCABA2795AFSA	J	AH	Center Cabinet
202	RUNTK0419AFZZ	J	AN	Flexible PWB Ass'y
203	LANGF1560AFFW	J	AC	Bracket,Cabinet
204	PCUSG0610AFSA	J	AC	Rubber Preventive Vibration
205	QTANZ9131AFFQ	J	AC	Terminal,Battery,+
206	QTANZ9132AFFQ	J	AC	Terminal,Battery,-
207	LHLDZ3233AFM1	J		Frame Ass'y
208	GFTAB1309AFSI	J	AE	Cover,Battery
209	LANGK0903AFFW	J	AG	Bracket,PWB
210	LANGZ0302AFM1	J	AE	Battery Cover Bracket Ass'y
211	GCABB2795AFSA	J	AG	Front Cabinet
212	GFTAC1931AFSA	J		Cover,MD
213	JKNBZ1908AFSA	J	AD	Knob,Hold
214	GCABC4316AFSA	J	AS	Disc Cover
215	LHLDZ3178AFFW	J	AD	Holder,LCD
216	HDECQ0508AFSA	J	AK	Decoration Plate
217	JKNBZ1986AFM1	J	AH	Operation Knob Ass'y
219	JKNBZ1911AFSF	J	AD	Knob,Operation
220	RUNTZ0552AFZZ	J	BA	LCD
221	CCABD4323AF01	J		Bottom Cabinet Ass'y [MD-MS200W]
221	CCABD4325AF01	J		Bottom Cabinet Ass'y [MD-MS200]
221	CCABD4326AF01	J		Bottom Cabinet Ass'y [MD-MS200H]
221- 1	—	—		Bottom Cabinet (Not Replacement Item)
221- 2	PSHET0330AFZZ	J	AC	Sheet,Bottom Cover
224	JKNBK0523AFZZ	J		Knob,Eject
225	LANGZ0328AFFW	J	AC	Bracket,Eject Knob
226	PSHEZ0746AFZZ	J	AB	Sheet,Eject Knob
227	QPWBH0250AFZZ	J	AE	Flexible PWB,Head Drive
229	PSHEZ0640AFZZ	J	AC	Cover,Terminal
230	LANGZ0304AFFW	J	AC	Bracket,MD Guide
231	PCUSG0586AFZZ	J	AB	Cushion,MD Guide Bracket
233	PCUSG0583AFZZ	J	AB	Cushion,Mechanism
234	PCUSG0585AFZZ	J	AB	Cushion,Mechanism
235	PCUSG0587AFZZ	J	AB	Cushion,Mechanism
236	PCUSG0624AFZZ	J		Cushion,Mechanism
237	PSHEZ0745AFZZ	J	AC	Sheet,Decoration Plate
239	PSLDC3336AFZZ	J	AC	Shield
240	HDECQ0507AFSA	J	AF	Decoration Plate
241	PCUSG0611AFZZ	J	AB	Cushion,Mechanism
242	PSHET0356AFZZ	J		LCD Sheet
243	PSHET0355AFZZ	J	AB	Sheet,
244	PCUSG0621AFZZ	J	AB	Cushion,Head
245	PCUSG0622AFZZ	J		Cushion,Mechanism
246	PCUSG0626AFZZ	J	AB	Cushion,Battery Cover
247	TLABS0465AFZZ	J	AB	Label,Laser Mark [MD-MS200W/H]

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
248	TLABM0562AFZZ	J	AD	Label, Specifications [MD-MS200W for Taiwan Only]
249	TLABS0472AFZZ	J	AC	Label, Laser Caution [MD-MS200W/H]
250	TLABM0563AFZZ	J		Label, Feature [MD-MS200H]
601	LX-BZ0903AFFN	J	AA	Screw, $\phi 1.4 \times 3.0$ mm
603	LX-BZ0856AFFD	J	AC	Screw, $\phi 1.8 \times 7.7$ mm
604	LX-BZ0805AFFN	J	AB	Screw, $\phi 1.7 \times 2.5$ mm
605	LX-BZ0908AFFN	J	AA	Screw, $\phi 1.4 \times 2.0$ mm
606	LX-BZ0910AFFN	J	AC	Screw, $\phi 1.7 \times 2.5$ mm with Spring Washer

ACCESSORIES/PACKING PARTS

△	QCNWG0382AFZZ	J	AK	Connecting Cord, RCA Type
△	RADPA3406AFZZ	J	BE	AC Adaptor [MD-MS200]
△	RADPA5402AFZZ	J	BF	AC Adaptor [MD-MS200W Except for Taiwan/Hong Kong]
△	RADPA5403AFZZ	J	BF	AC Adaptor [MD-MS200W for Taiwan]
	RADPA7407AFZZ	J	BF	AC Adaptor [MD-MS200H for Europe]
△	RADPA8404AFZZ	J	BK	AC Adaptor [MD-MS200W for Hong Kong]
△	RADPA8404AFZZ	J	BK	AC Adaptor [MD-MS200H for UK]
	RPHOH0167AFZZ	J	AY	Stereo Headphones Unit [MD-MS200W/H]
	RPHOH0168AFZZ	J	BB	Stereo Headphones Unit [MD-MS200]
	RRMCW0020AFSA	J	AV	Remote Control
	SPAKA2624AFZZ	J	AE	Packing Add. [MD-MS200W/H Only]
	SPAKC6377AFZZ	J	AL	Case [MD-MS200W]
	SPAKC6386AFZZ	J	AL	Case [MD-MS200H]
	SPAKZ0379AFZZ	J	AF	Packing Case [MD-MS200W/H Only]
	SPAKZ0422AFZZ	J	AE	Case, AC Adaptor [MD-MS200W/H Only]
	SPAKZ0423AFZZ	J	AD	Pad, AC Adaptor [MD-MS200W/H Only]
	SPAKZ0449AFZZ	J		Spacer, Operation Manual [MD-MS200W for Korea Only]
	SSAKH0289AFZZ	J	AD	Polyethylene Bag, Unit [MD-MS200W/H Only]
	TCADS0085AFZZ	J	AD	Service Card [MD-MS200H for UK Only]
	TCAUH0341AFZZ	J	AD	Caution, Headphones [MD-MS200 Only]
	TGANE1220AFZZ	J	AB	Warranty Card [MD-MS200W for Australia Only]
	TGANE1223AFZZ	J	AK	Warranty Card [MD-MS200H for UK Only]
	TINSZ1320AFZZ	J		Operation Manual [MD-MS200W/H]
	TINSZ1321AFZZ	J		Operation Manual, Illust [MD-MS200W/H]
	TINSZ1323AFZZ	J		Operation Manual [MD-MS200]
	TINSZ1324AFZZ	J		Quick Guide, Spanish [MD-MS200 Only]
	UBAGC0060AFSA	J	AK	Carrying Bag
	UBATI0035AFSA	J	BE	Rechargeable, Battery [MD-MS200W/H]
	UBATI0055AFSA	J		Rechargeable, Battery [MD-MS200]
	UDSKM0001AFZZ	J	AZ	Recording Mini Disc

P.W.B. ASSEMBLY (Not Replacement Item)

PWB-A	DCYO-2990AF93	J	—	Main
PWB-B1,2	DCEKZ0773AF03	J	—	Mechanism/Head drive (Combined Ass'y)

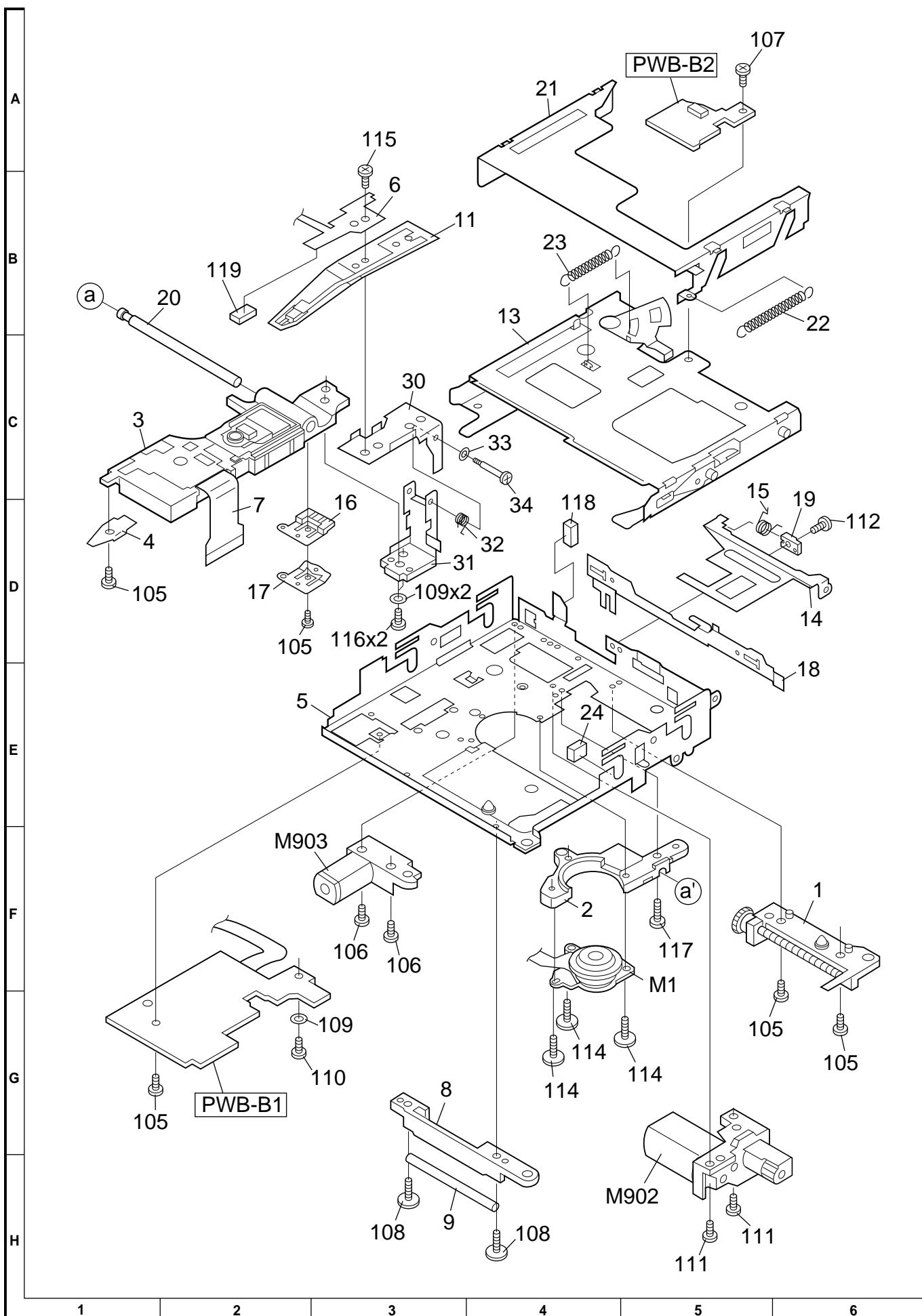


Figure 5 MD MECHANISM EXPLODED VIEW

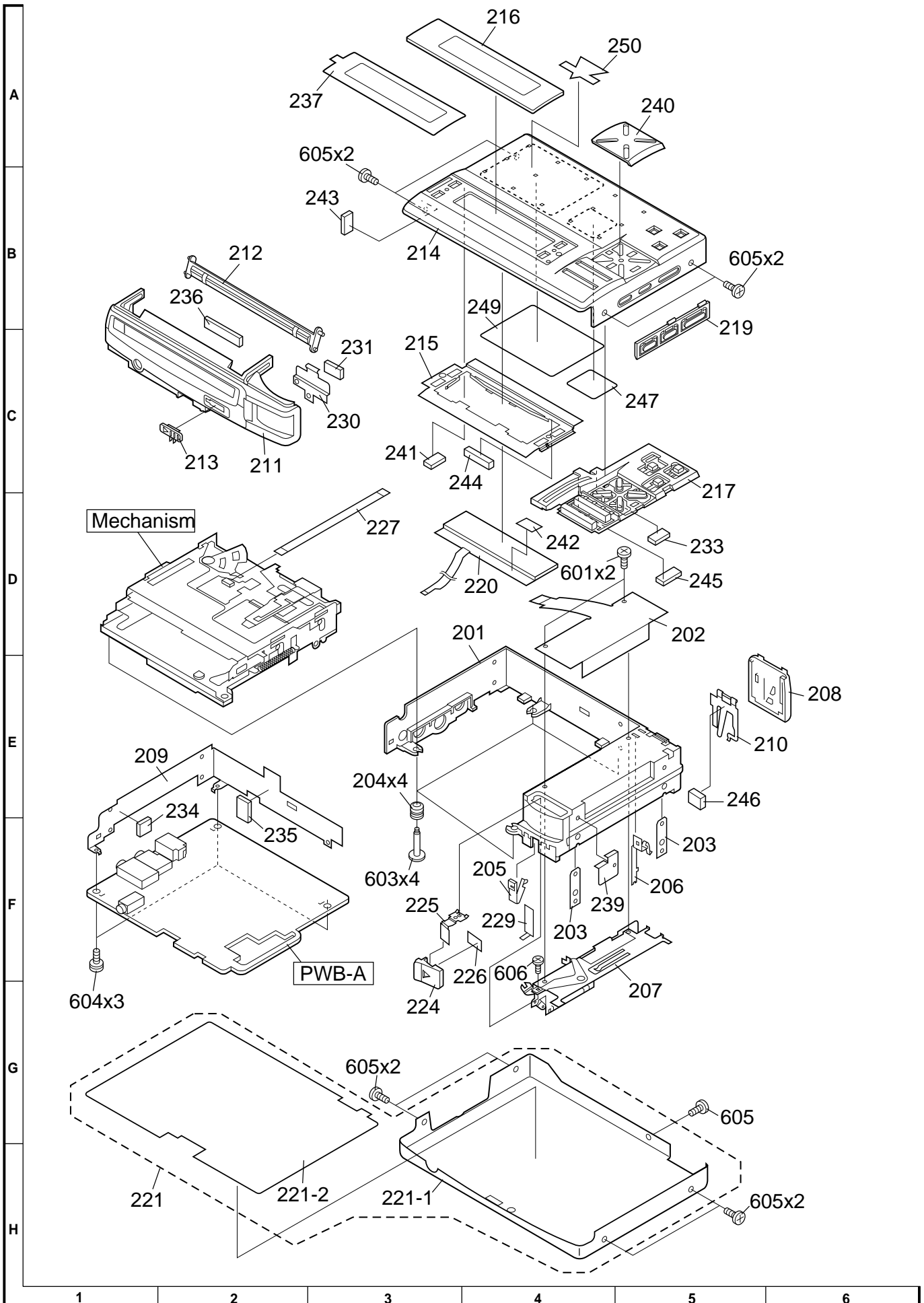


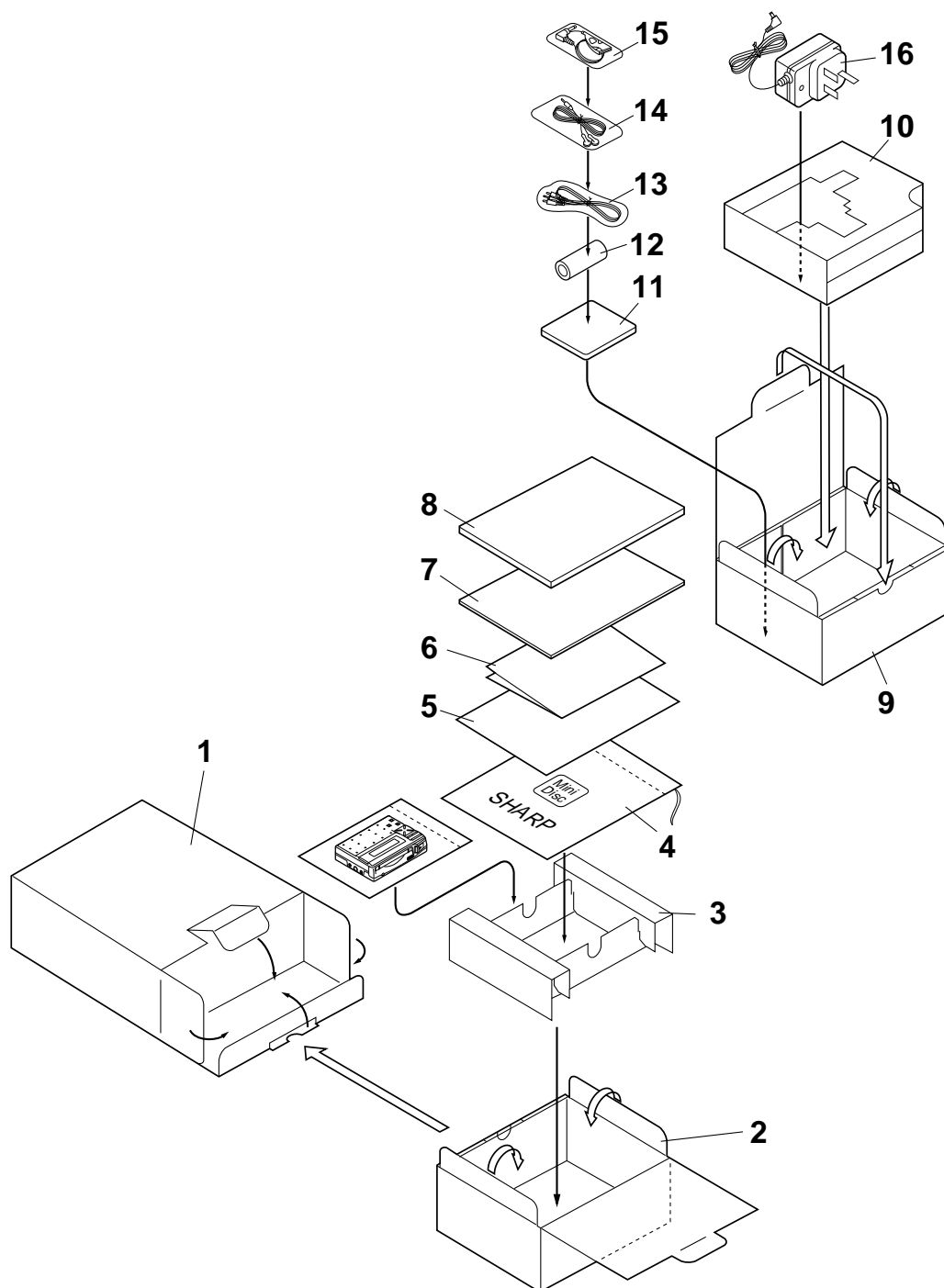
Figure 6 CABINET EXPLODED VIEW

PACKING METHOD (MD-MS200H FOR UK ONLY)

SETTING POSITION OF SWITCHES AND KNOBS

UNIT	Disc Cover	CLOSE OFF
Remote Control	HOLD Volume	CANCEL CENTER

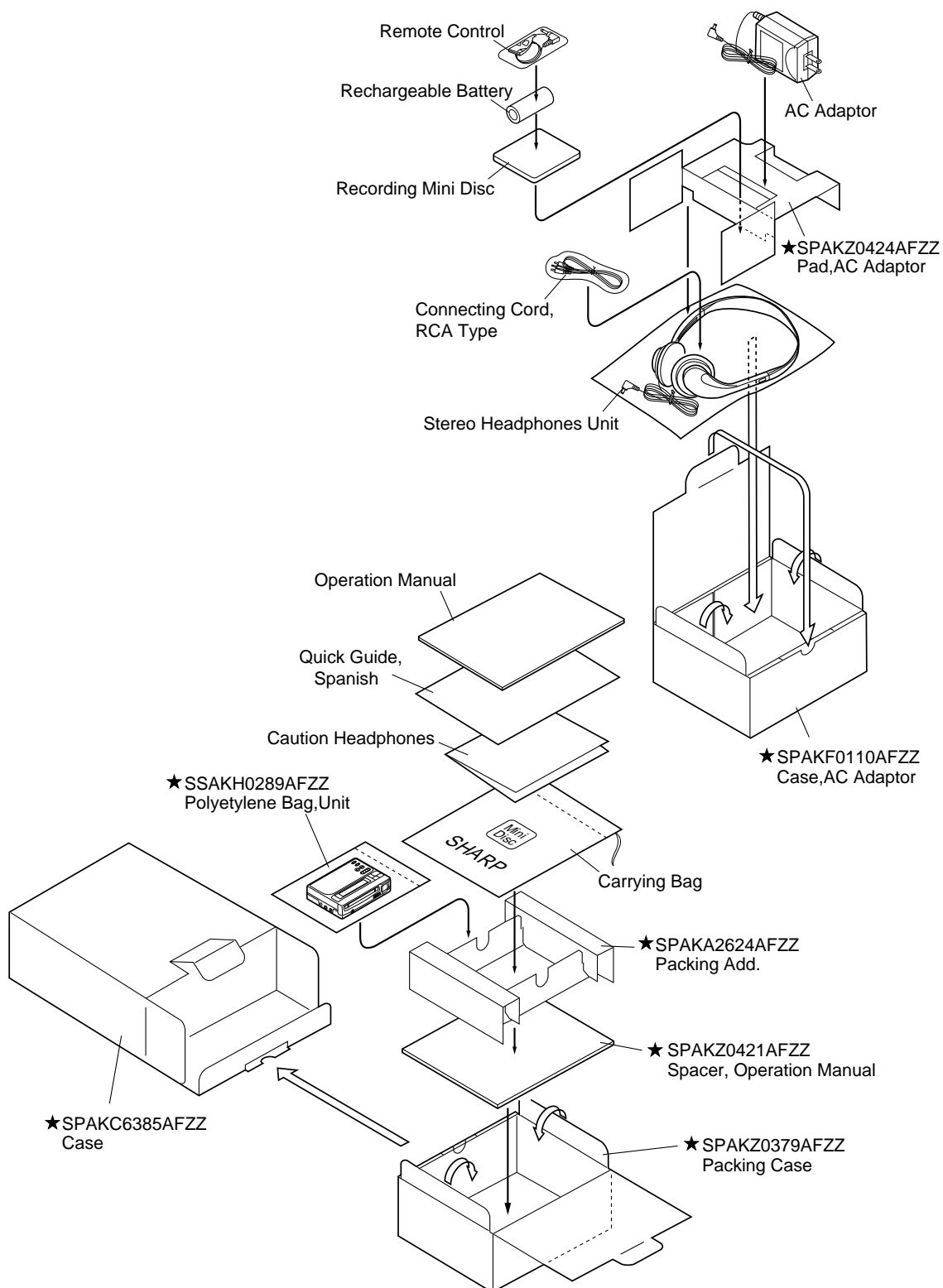
- | | |
|-------------------------------|----------------|
| 1. Case | SPAKC6386AFZZ |
| 2. Packing Case | SPAKZ0379AFZZ |
| 3. Packing Add. | SPAKA2624AFZZ |
| 4. Carrying Bag | UBAGC0060AFSA |
| 5. Warranty Card | TGANE1223AFZZ |
| 6. Service Card | TCADS0085AFZZ |
| 7. Operation Manual, Illust | TiNSZ1321AFZZ |
| 8. Operation Manual | TiNSZ1320AFZZ |
| 9. Case, AC Adaptor | SPAKZ0422AFZZ |
| 10. Pad, AC Adaptor | SPAKZ0423AFZZ |
| 11. Recording Mini Disc | UDSKM0001AFZZ |
| 12. Rechargeable, Battery | UBATi 0035AFSA |
| 13. Connecting Cord, RCA Type | QCNWG0382AFZZ |
| 14. Stereo Headphones Unit | RPH0H0167AFZZ |
| 15. Remote Control | RRMCW0020AFSA |
| 16. AC Adaptor | RADPA8404AFZZ |
| 17. Polyethylene Bag, Unit | SSAKH0289AFZZ |



PACKING OF THE SET (MD-MS200 ONLY)

SETTING POSITION OF SWITCHES AND KNOBS

UNIT	Disc Cover HOLD	CLOSE OFF
Remote Control	HOLD Volume	CANCEL CENTER



★: Not Replacement Item

SHARP